User Manual
“GT-20 v1.6 configurator”



List of Tables

About the program

«GT-20 configurator» allows executing the following operations:

- Device monitoring in real-time with status display of its main components;
- Device configuring via the graphic interface;
- Device diagnostics with the saving of information in the log-file;
- Update the firmware device.

1. Installation and program startup

Run of a CD, or download from a site the program Setup_Configurator.exe and follow instructions. In case of security warning of your computer confirm installation and program startup.

Run the program GT-20 Configurator (from Start menu \Programs \NAVISET). Turn on the power supply of a device and connect it via USB cable to your computer. Having found the new device, the operating system will suggest installing the driver.



Figure 1.1

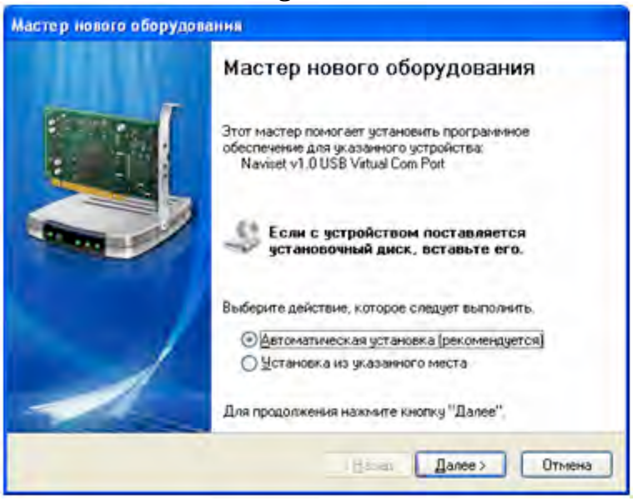


Figure 1.2

Do not modify the default settings, i.e. leaving "automatic installation", click "Next".

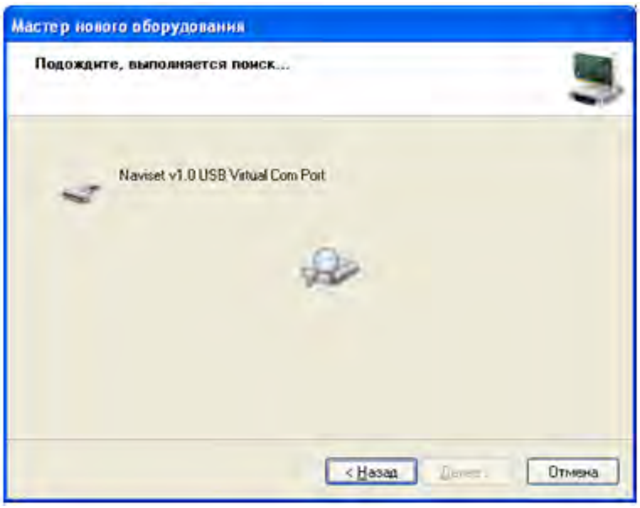


Figure 1.3

Click the button "Ready" after the operating system installing the appropriate device drivers, for a completion of master operation.

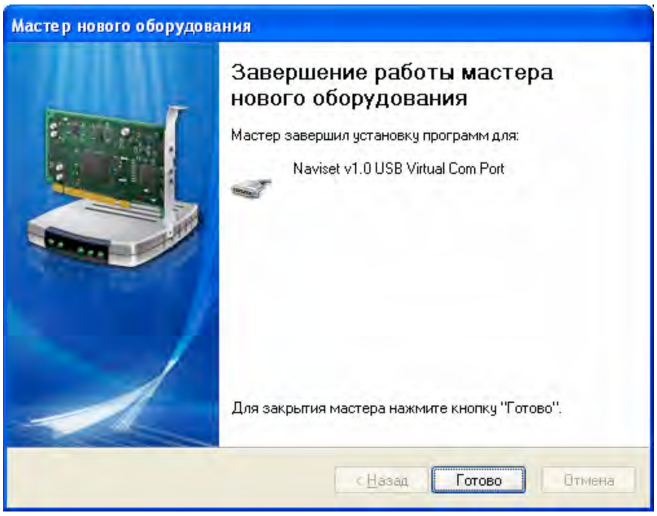


Figure 1.4

Further pass to the menu «Setup \Connection …» and in the dropdown list select Com port to which the device is connected, and click "OK".

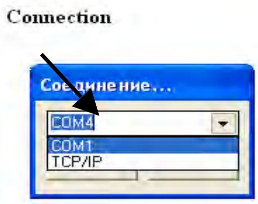


Figure 1.5

If the device is defined by a configurator, all buttons of a top panel will be active, and in status bar there will be a message «Connected». If the device wasn't found, pass to the above described menu and select other Com port.

The type of "TCP/IP" connection is used for remote device configuring.

If you select this type of connection, you see the "Server" window (Figure 1.6). In this window, enter the available port of the system and press the "Start", after that the server will wait to connect with a device. Further send to the device SMS COM5 command (see the passport) with IP address and server port. After connection setting, menu buttons will become active.

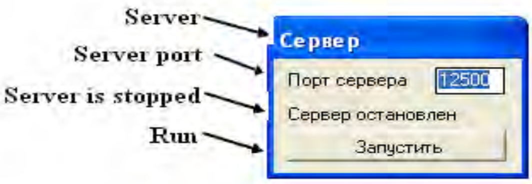
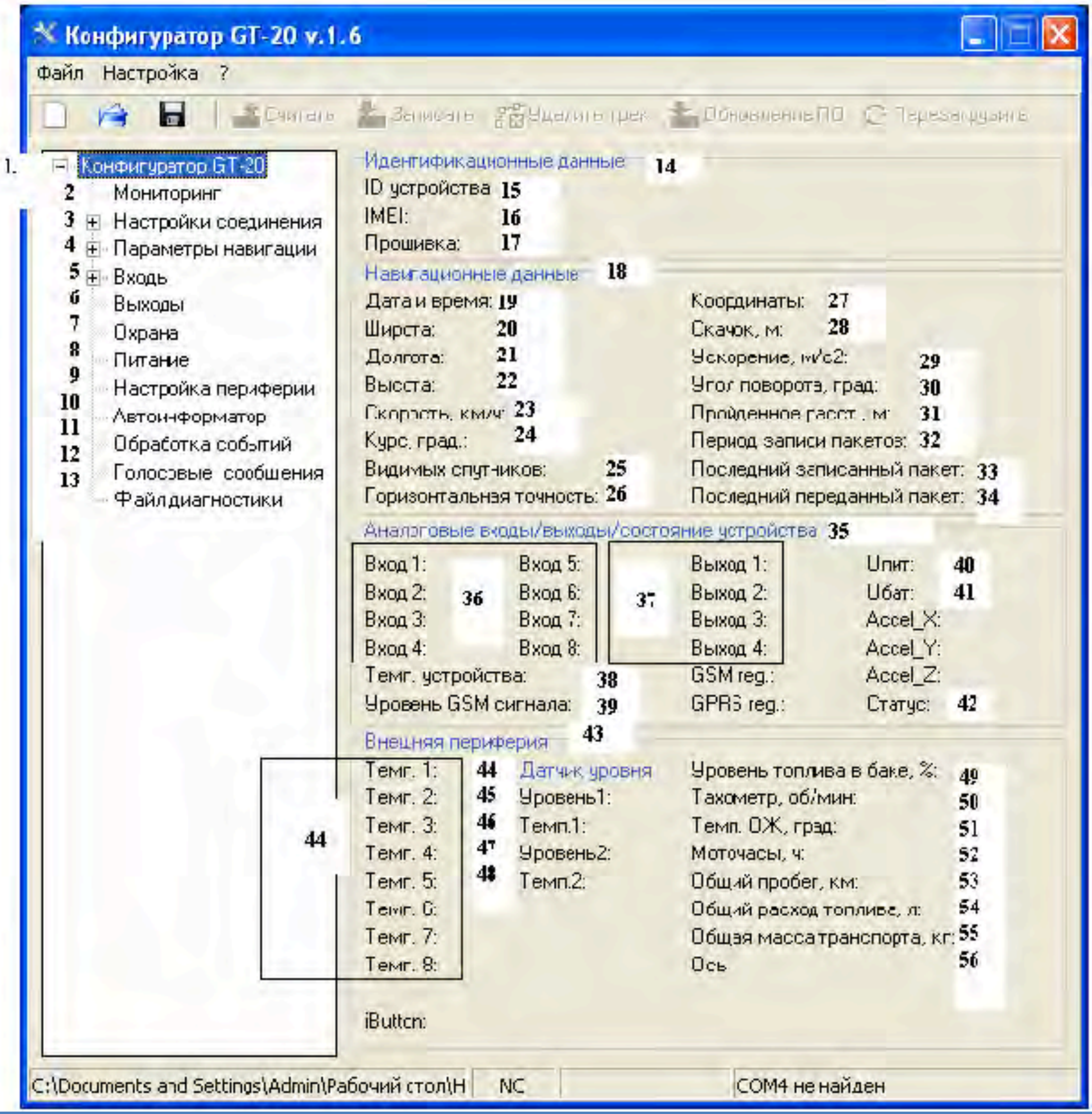


Figure 1.6

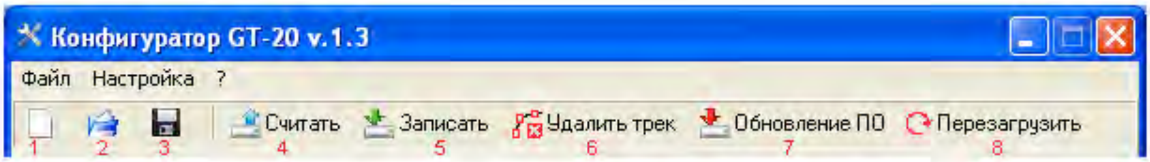
Visual appearance of the «GT-20 v1.3 Configurator» is shown in Figure 1.7.



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Outputs
7. Security
8. Power supply
9. Peripheral configuration
10. Auto informator
11. Event process
12. Voice message
13. Diagnostic file
14. Identification data
15. Device ID
16. IMEI
17. Firmware
18. Navigation information'
19. Date and time
20. Latitude
21. Lengitude
22. Height
23. Speed, km/h
24. Heading, degree
25. Visible satellites
26. Horizontal delicacy
27. Coordinates
28. Jump
29. Acceleration
30. Turning angle
31. Distance traveled, m
32. Period of packet
33. The last written packet
34. The last transferred packet
35. Analog inputs/outputs/state of device
36. 1-8 inputs
37. 1-4 outputs
38. Temperature of device
39. Level of GSM signal
40. U power
41. U battery
42. State
43. External periphery
44. 1-8 temperature
44. Fuel level sensor
45. 1 level
46. 1 temperature
47. 2 level
48. 2 temperature
49. Fuel level, %
50. Tachometer, r/sec
51. Coolant temperature, degree
52. Motometer, h
53. Total distance, km
54. Total fuel consumption, l
55. Total mass of vehicle, kg
56. Axle

Figure 1.7

2. Buttons of a top panel



1. Run configuration
2. Open
3. Save
4. Read
5. Write
6. Delete track
7. Update SW
8. Reboot

Figure 2.1

The **"File"** menu contains the basic operations of configuration file:

- Run configuration by default;

- Open the configuration file;

- Save a configuration.

Points of this menu are duplicated on a panel below by buttons 1,2,3 respectively (a figure 2.1).

"Settings" menu. Menu selects the type of connection ("Connecting ..."), (Figure 2.2), and turning on / off mode of diagnostics in real time (Figure 2.3).



Figure 2.2

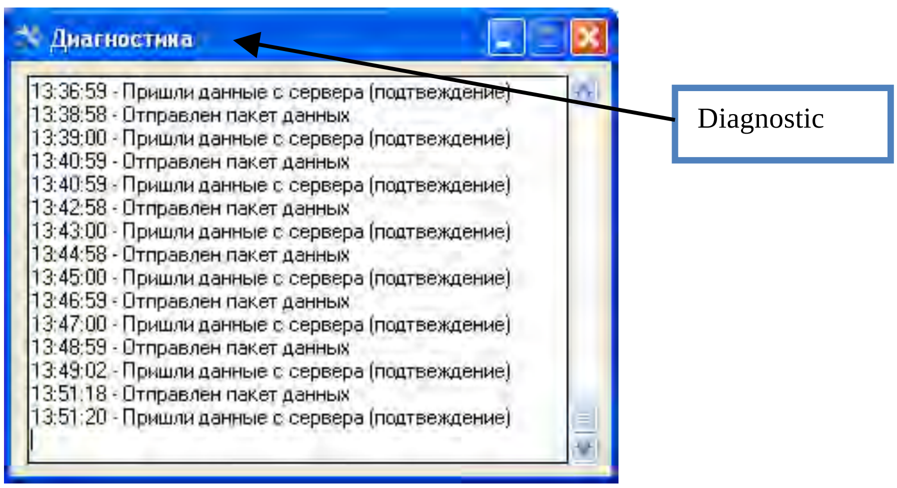


Figure 2.3

The following buttons are active in case of connection is set with a device.

Button **"Read"** (4) allows reading the current configuration of the device. Read data are displayed in the appropriate fields of the program. Course reading is displayed in the window (Figure 2.4).

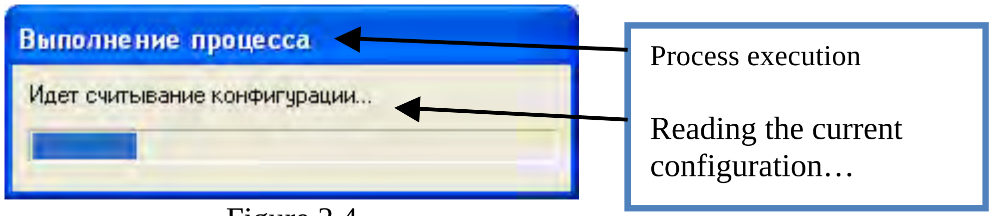


Figure 2.4

After configuration reading it will be reported of one of this message:

- **"Configuration is read"** all data has been read;
- **“Not all data is read, update a configurator”.** This message will appear if device software version is newer, i.e. added new parameters which the configurator can't display.
- **“Try again”.** This message will appear, if for whatever reason it was not possible to read a configuration. Check connection with the device.

"Write" button (5) allows writing a configuration on the device (Figure 2.5).

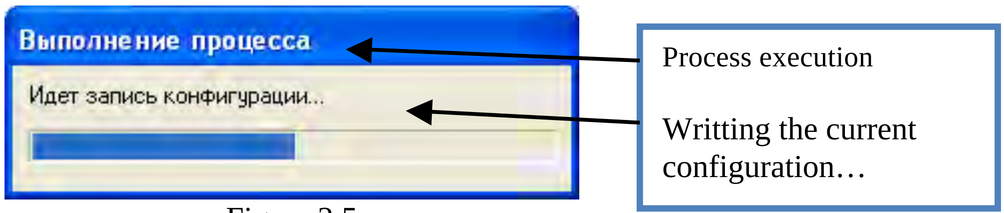


Figure 2.5

After the configuration writing it will be reported of one of this message:

- **“The device configuration is updated”.** The operation of configuration writing is successfully executed.
- **“The configuration isn't written, it is necessary to update a configurator”.** The reason of this message is insufficiency of data for configuring, i.e. the version of a device software is newer with new parameters.
- **“Failed to update the configuration”.** It was not possible to write a configuration for any reason.

Button **"Delete Track"** (6). Used in the event if the structure of the package store was changed in the internal memory (specified in the manual's part of firmware description) or just to remove the accumulated packets. After clicking this button, it is appeared a window **"Confirm"**(Figure 2.6), which requires a password to complete the operation ("1234").

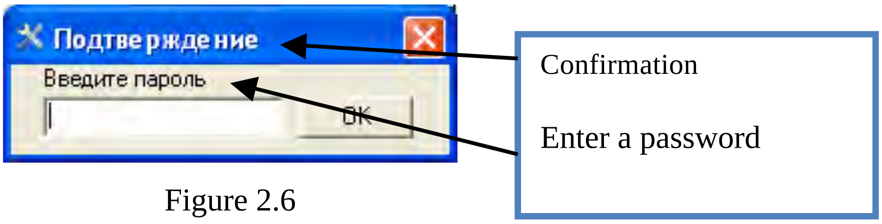


Figure 2.6

Button **“Update SW”** (7). It allows using this configurator to update device software (figure 2.7).

To update device software click the button «…» and select “**firmware_XXX.bin”** file where XXX indicates the software version.

If the selected file corresponds to required parameters, the button **"Update program"** will be active, otherwise the message **"The opened file is not a firmware file!!!"** will appear.

To start the update, click the button **“Update the program”.** The device will reboot and start programming. After programming completion the device will reboot and will return again to an operating mode.

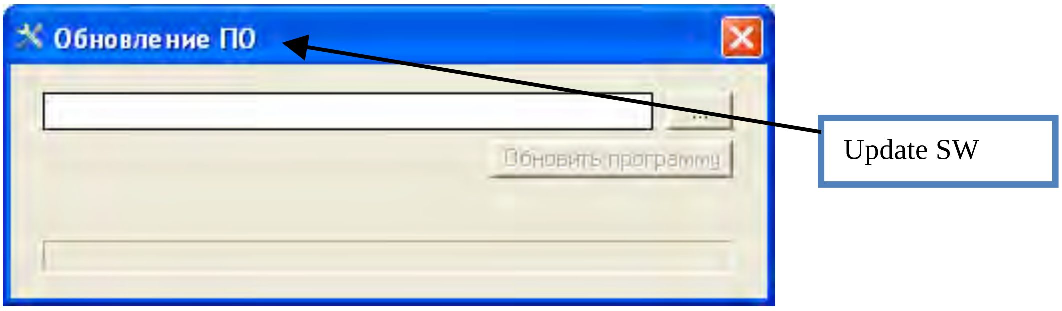


Figure 2.7

"Reboot" button (8). It is used for device reset without switching off to apply the made changes in a configuration.

3. Status bar

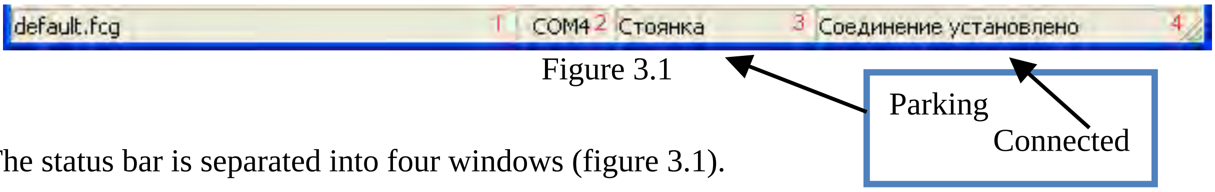


Figure 3.1

The status bar is separated into four windows (figure 3.1).

The window "1" displays information of the open, read or saved configuration file and can have following values:

- **“default.fcg”.** The configuration data is loaded by default.
- **“C:\My_conf.fcg”.** The configuration is loaded from the My_conf.fcg file from the root directory of the disk C:\ or if you are saving a file, the name of the saved file is displayed.
- **"Read from a device".** Configuration was read from the device.
- **"Impossible to open".** No access to open the file.
- **"Unable to save".** The disc writing might be forbidden.
- **"File is not found, default.fcg is loaded”.** During startup, the configurator tries to open the last open or save file if the file is not found or access to it is forbidden, the configuration is loaded by default.

The window "2" displays number of the current Com-port through which is using now. Inscription "NC" indicates that the selected Com-port does not exist or cannot be opened. Go to the menu "Settings \ Connection ..." and select the appropriate port.

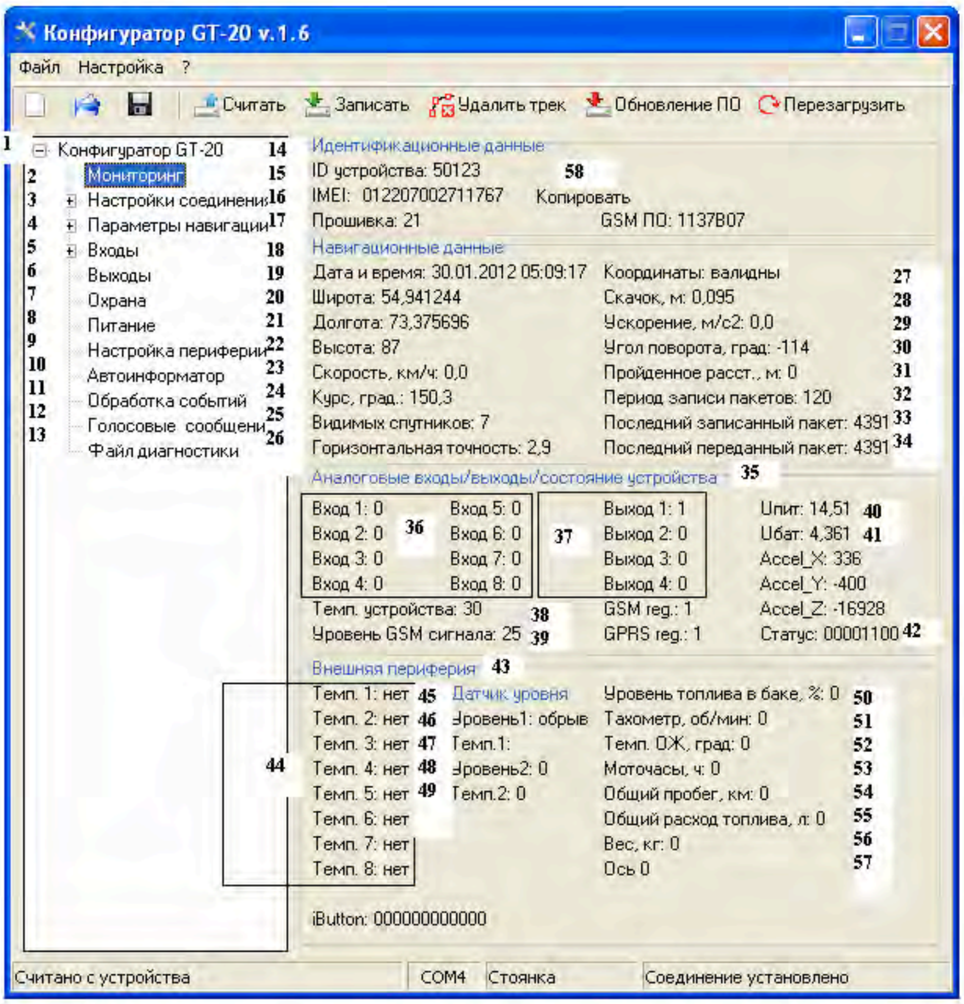
The window "3" indicates device state: the device does not move and has a state of "parking" or is moving and has a state of "movement." It can be used to configure the sensitivity of motion sensor.

The window "4" displays connection mode information:

- **“Connected”.** Connection with the device was set. Reception of information.
- **“V.1.0 loader mode”.** Connection was set with the device loader, the loader version information is provided here.
- **“The device isn't found”.** It is displayed if the device doesn't respond to configurator commands.
- **“Port Com setup …”.** It is displayed when we are in the menu «Com port …».

4. Vertical menu

4.1. Monitoring



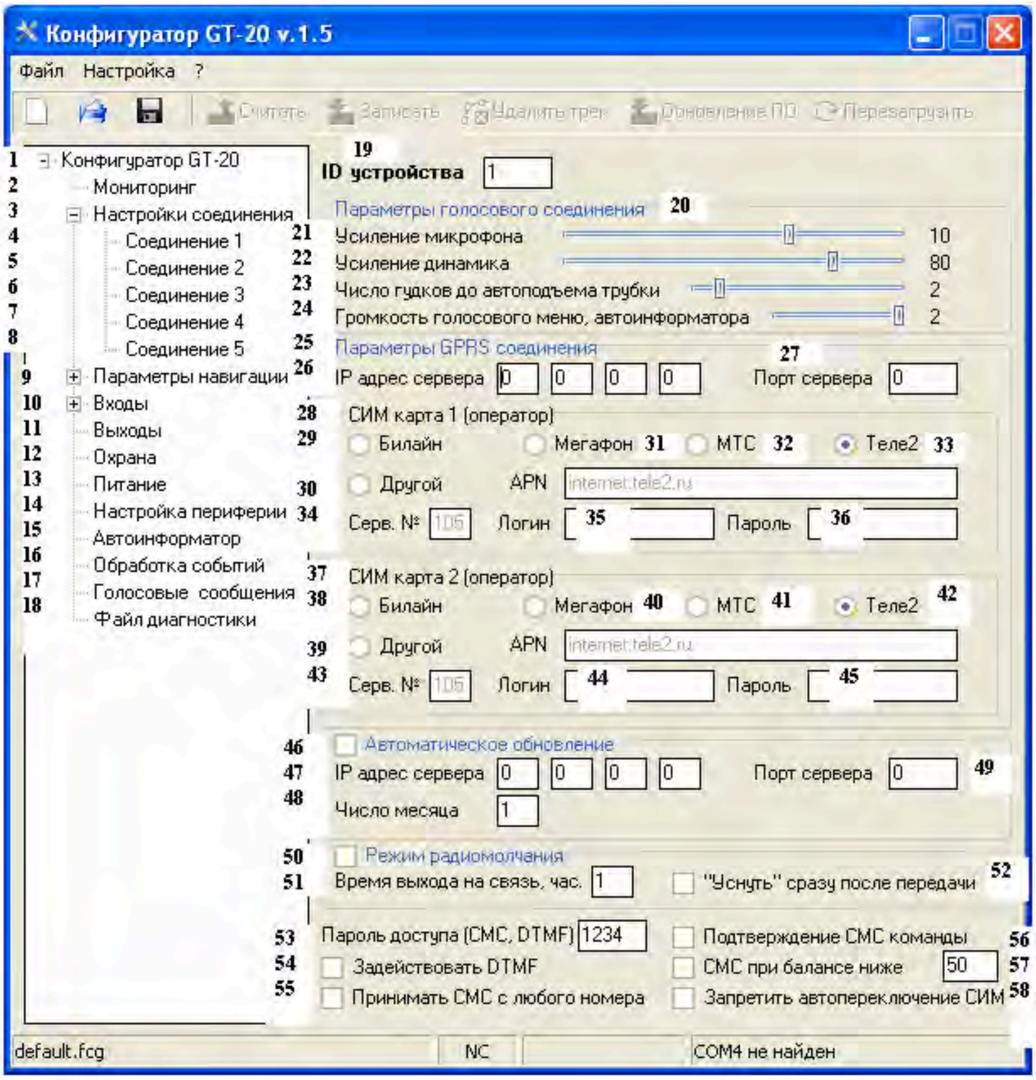
1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Outputs
7. Security
8. Power supply
9. Peripheral configuration
10. Auto informator
11. Event process
12. Voice message
13. Diagnostic file
14. Identification data
15. Device ID
16. IMEI
17. Firmware
18. Navigation information'
19. Date and time
20. Latitude
21. Lengitude
22. Height
23. Speed, km/h
24. Heading, degree
25. Visible satellites
26. Horizontal delicacy
27. Coordinates
28. Jump
29. Acceleration
30. Turning angle
31. Distance traveled, m
32. Period of packet
33. The last written packet
34. The last transferred packet
35. Analog inputs/outputs/state of device
36. 1-8 inputs
37. 1-4 outputs
38. Device temperature
39. Level of GSM signal
40. U power
41. U battery
42. State
43. External periphery
44. 1-8 temperature
45. Fuel level sensor
46. 1 level
47. 1 temperature
48. 2 level
49. 2 temperature
50. Fuel level, %
51. Tachometer, r/sec
52. Coolant temperature, degree
53. Motometer, h
54. Total distance, km
55. Total fuel consumption, l
56. Total mass of vehicle, kg
57. Axle
58. Copy

Figure 4.1

This window displays information of the device and a status of its main nodes:

- Identification data, such as number of the device, IMEI and software version;
- Navigation data (coordinates, height, speed, heading, quantity of satellites, etc.);
- The voltage of the analog inputs, external voltage, the internal battery;
- A state of outputs (0 – passive, 1 – active);
- Data of motion sensor axles;
- Internal temperature of the device;
- Level of GSM signal;
- GSM / GPRS registration State (0 - unregistered, 1 - registered, home network, 2 - unregistered, the search of operator, 3 - registration is cancelled, 4 - unknown, 5 - registered, roaming);
- Information of the external periphery (indication of temperature sensors, fuel level, the key code of iButton, distance travelled, etc.).

4.2. Setting of connection



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. 1 connection
5. 2 connection
6. 3 connection
7. 4 connection
8. 5 connection
9. Navigation setting
10. Inputs
11. Outputs
12. Security
13. Power supply
14. Peripheral configuration
15. Auto informator
16. Event process
17. Voice message
18. Diagnostic file
19. Device ID
20. Voice connection parameters
21. Microphone gain
22. Dynamics gain
23. Number of tone after auto answering
24. Voice menu volume, auto informer
25. GPRS connection parameters
26. IP server address
27. Server port
28. 1 SIM card (operator)
29. Beeline
30. Other
31. Megaphone
32. MTS
33. Tele 2
34. # Server
35. Login
36. Password
37. 2 SIM card (operator)
38. Beeline
39. Other
40. Megaphone
41. MTS
42. Tele 2
43. # Server
44. Login
45. Password
46. Auto update
47. Server address IP
48. Number of month
49. Server port
50. Radio silence mode
51. Time of log-on
52. Sleep mode after transmission
53. Access password
54. Involve DTMF
55. Receive SMS of any number
56. Confirmation of SMS command
57. SMS in case of balance lower
58. Forbid auto switching of SIM cards

Figure 4.2

The setting of common connection parameters is completed in this window:

- Device ID. Device peculiar number, assigned by a system;
- Voice connection parameters;
- GPRS connection parameters, where identified IP address and server port on which will send data of device. Also you will need to specify which operator you used SIM cards, if there is not your operator in list, select point “Other” and identify parameters on your own;
- Auto update: IP address and server port with which the device will connect downloading update in assigned date “Date” of each date;

“Radio silence mode”. Switching on present parameter is activated the Radio silence function: the device connects at set intervals. Radio communications is active during fixing period of time (10min), after that the device will in radio silence mode.

“Time of log-on” specifies time interval of log-on with a server.

“Sleep mode after transmission”. In case of active parameter the device will select immediately radio silence mode after transmission of all stored data packets without waiting for specified time interval.

“Access password”. It is a password allowing access to configuration via SMS or control via DTMF;

“Confirmation of SMS command”. Confirmation of completed command will sent per each correct accepted SMS command.

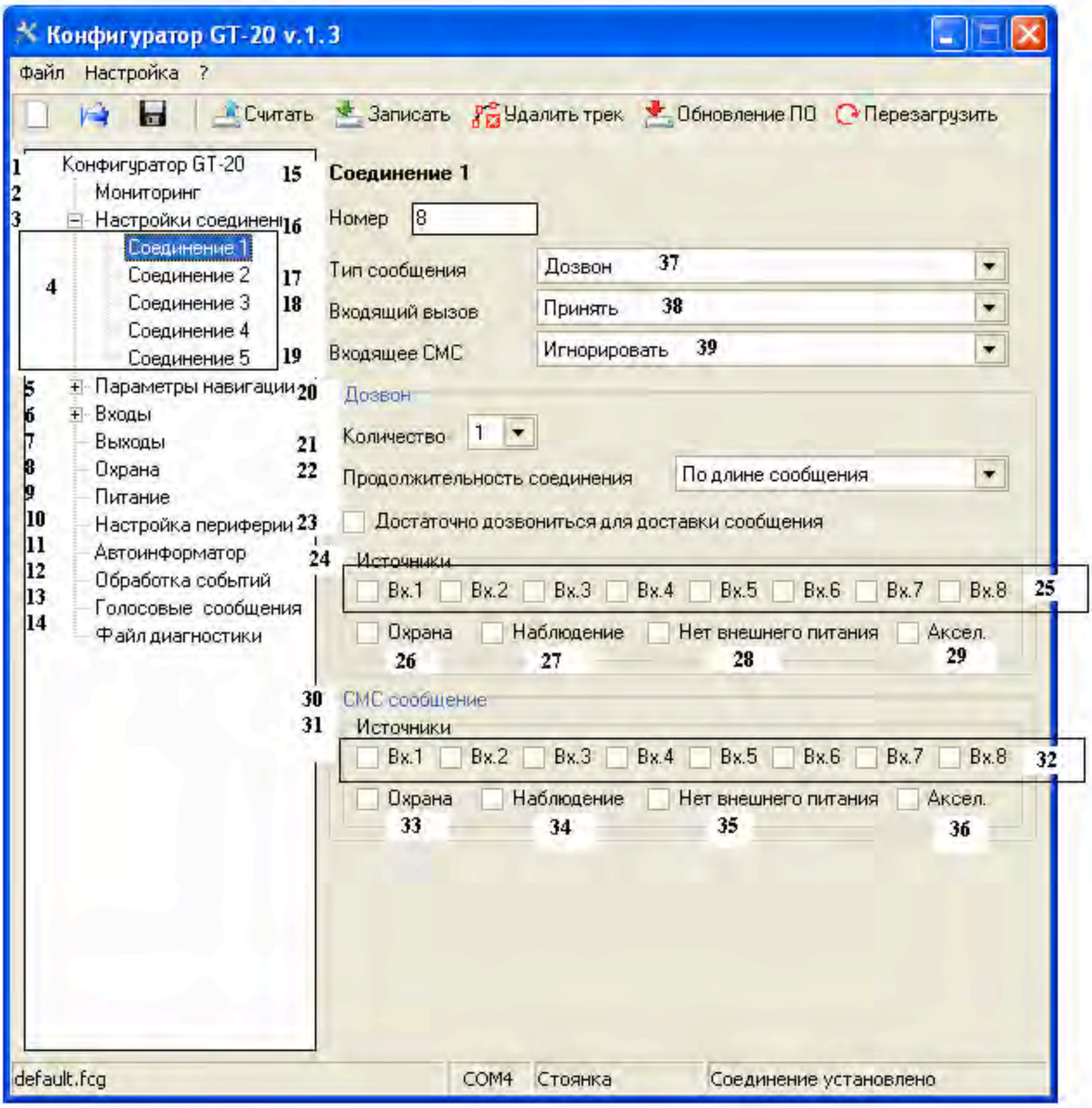
“SMS in case of balance lower”. Control a SIM card balance. When the balance is lower identified level the SMS will sent to the first number of the list.

“Involve DTMF”. This parameter allows operation of DTMF decoder. With this enabled parameter it is possible to work with voice menu and operate device.

“Receive SMS of any number”. Allows accept SMS of any telephone number.

“Forbid auto switching of SIM cards”. When the device has not GSM connection, it does not switch to another SIM card, and continue operating of current SIM card until connection reactivation. Switching to another SIM card is possible to do via command.

The setting of each 5 available connection parameters is completed in this window. Message is sent if some of required source has an active move, separately to dial-up and SMS.



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2. Monitoring
3. Connection setting
4. Connection 1-5
5. Navigation setting
6. Inputs
7. Outputs
8. Security
9. Power supply
10. Peripheral configuration
11. Auto informator
12. Event process
13. Voice message
14. Diagnostic file
15. Connection 1
16. Number
17. Message type
18. Received call
19. Received message
20. Dial-up
21. Quantity
22. Connection duration
23. Suffice to dial-in for message delivery
24. Source
25. Input 1-8
26. Security
27. Monitoring
28. No external power
29. Accelerometer
30. SMS
31. Source
32. Input 1-8
33. Security
34. Monitoring
35. No external power
36. Accelerometer
37. Dial-up
38. Accept
39. Ignore

Figure 4.3

In the field **"Number"** enter a telephone number, to which will called or sent SMS. To number "Connection 1" make a call pressing a button "Call manager" or send a service SMS, because of that it is desirable to indicate number of your control center.

In the field **"Message type"** available to select one of the 4 variants:

- **"Dial-up".** Dial-up to specified number and if the parameter "Involve DTMF" is enabled and SD card is installed with a files per each "source", the respective message will be displayed;
- **"Dial-up and SMS".** Above described is doubled sending respective SMS;
- **"SMS".** Send only SMS.
- **"SMS, if failing dial-up".** SMS is sending when the dial-up is failing.

In the field **"Received call"** available to select one of 4 variants:

- **"Accept".** After the specified number of tone in the menu "Connection setting" the device will be automatic answered to a call. Answering to a call the audio interface is switched and via it is available to listening;
- **"Accept and go to voice menu"**. Additionally to above described, the voice menu is switched on, on conditions that parameter "Involve DTMF" is active, via which you control outputs of device or request current device state;
- **Change the security mode"**. Indentifying the number of caller the device select security mode to the opposite one, i.e. if the device is disarmed, the device will be armed, and without call answering will be declined it;
- **"END"**. The received call will be declined.

The field **"Received message"** has 2 parameters to choice:

- **"Ignore".** Any received SMS will be ignored;
- **"Accept".** Receiving and SMS processing;

Parameter **"Quantity"** specifies quantity of attempts. The device will attempt to call to user. The end of dial-up is answer to call.

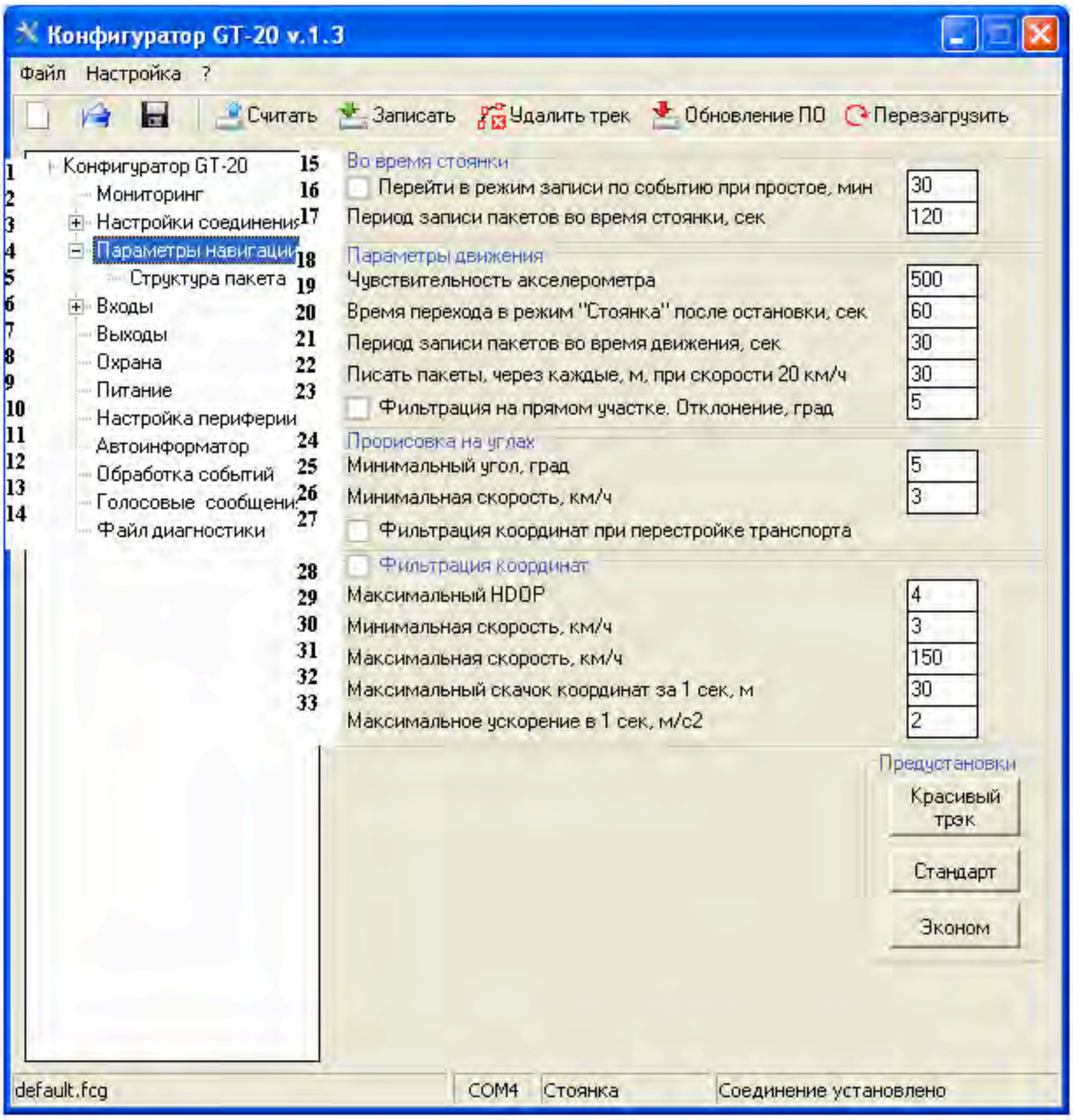
Parameter **"Duration of connect"** specifies time of active connection;

- **"The length of message".** The connection will be ended automatically after pronunciation respective message;
- **"Specify by user"**. The time of connection ending is specified by user and is not depended of pronounced message length.

Activated a parameter **“Suffice to dial-in for message delivery”,** the device is waiting an user answer, after that it will decline the call. User answer is the fact that message is received. The declining the call is occurring in not the chargeable call duration, which will not lead to a call waste.

“Source” specify the operation (dial-up and/or SMS) selecting to an active mode. The operation of inputs using for security is available only when the device is armed.

4.3. Navigation parameters



1. GT-20 Configurator
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4. Navigation setting
5. Packet structure
6. Inputs
7. Outputs
8. Security
9. Power supply
10. Peripheral configuration
11. Auto informator
12. Event process
13. Voice message
14. Diagnostic file
15. During the parking

16. Select the writing per event mode, min
17. Period of packet writing during the parking, sec
18.Movement parameters
19. Accelerometer delicacy
20. Time of selecting to "packing" mode after the stopping, sec
21. Period of packet writing during the movement, sec
22. Write the packet in each, m, with the 20 km/h speed
23. Filtering on the straight place. Deflection, degree

24. The drawing of corners
25. Min corner, degree
26. Min speed, km/h
27. Filtering of coordinates during line change
28. Coordinate filtering
29. Max HDOP
30. Min speed, km/h
31. Max speed, km/h
32. Max jump of coordinates per 1 sec, m
33. Max acceleration per 1 sec, m/sec2

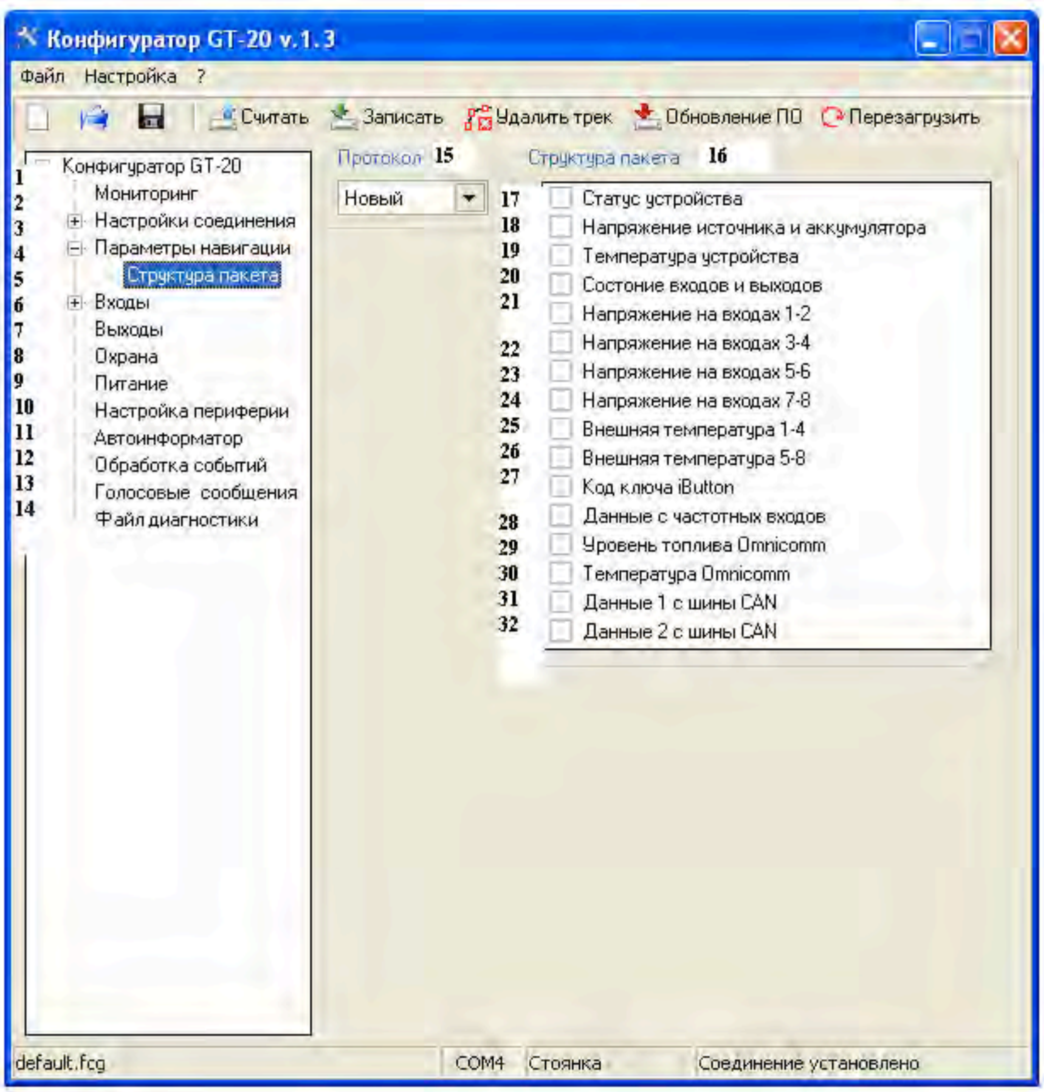
Figure 4.4

This window is for:

- The parameter setting of navigation data packet writing to memory of a device;
- The parameter setting of coordinate filtering;
- The choice of protocol and setting of a structure of transmit data packet.

The group **“During the packing”** has 2 parameters:

- **“Period of the packet writing during the packing”** specifies the time interval, at the end of which it will be operated the next packet writing during the vehicle parking;
- **“Select the writing per event mode”.** If the parameter is active, the device suspends the packet writing to memory. The next data packet will write in case of event, the source of which will be movement sensor, the active mode of analog inputs, absent of external voltage.



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Packet structure
6. Inputs
7. Outputs
8. Security
9. Power supply
10. Peripheral configuration
11. Auto informator
12. Event process
13. Voice message
14. Diagnostic file
15. Protocol
16. Packet structure
17. Device state
18. Voltage of source and battery
19. Device temperature
20. State of inputs and outputs
21. Inputs voltage 1-2
22. Inputs voltage 3-4
23. Inputs voltage 5-6
24. Inputs voltage 7-8
25. External temperature 1-4
26. External temperature 5-8
27. iButton key code
28. Data of frequency input
29. Fuel level Omnicomm
30. Data 1 of CAN bus
31. Data 2 of CAN bus

Figure 4.4.1

Group **“Movement parameters”.**

“Accelerometer delicacy” Dimensionless quantity, which specifies the level, in case of exceeding it, the device will switch into a “movement” mode.

The level is setting experimentally. In a case of a false operation during a parking with an operating engine of extreme vibration, the present parameter is necessary to increase.

“The time of switching into “parking” mode…” If during the indicated time the movement sensor has passive state, the device is switching into “parking” mode.

“Period of writing the packet during the movement” specifies the time interval, with which the data packet will record during the movement with the speed lower than 10 km/h.

“White the packet in each…”. If the speed is higher 10 km/h the interval of packet writing is specified of travelled distance, which is in proportion to movement. For example, if the speed is lower 20 km/h the parameter equals 30 m, so if the speed is higher 20 km/h and lower 40 km/h the packet write per each 60 m, if the speed is of 40 km/h to 60 km/h – 90 m.

“Filtering on straight place”. If the present parameter is active, the additional filtering of coordinates is conducted on the straight place, decline the traffic. In case of straight movement it is controlled the deviation from the course, and if it is not higher specified value, the coordinates is writing to device memory. If the filtering is switched on, the parameter **“Write packet in each…”** is possible to low for more detail road drawing. The examples of writing track with switching off filtering on the straight place (on the left) and with the switching on filtering (on the right) are on the figure 4.5, 4.6, 4.7.

Group **“The drawing of corners”.**

“Minimum corner” is indicated the corner, in a case of lower which write a packet with coordinates to device memory. The value of this corner must be chosen so that on the one side, small maneuvers of vehicle in a straight place does not lead to the writing of data packet, and on the side, the corner should not be large enough to be able to fix the turn.

“Minimum speed” defines a speed, if the value is higher it, the device is check a corner.

“Filtering of coordinates during line change” If the present parameter is enabled, the additional filtering of corners is used via the algorithm. Fixing the moment of vehicle turn, the coordinate analysis begins. If at the end of the analysis the direction of movement remains the same (the car changed a line of road) or changed slightly (the turning angle didn't exceed 30 degrees), coordinates don't register in memory of the device. In case of switched on filtering, “Minimum corner” can accept smaller value for more detail drawing of turn.

Group **“Filtering of coordinates”** If the filtering of coordinates is enabled, the analysis of saved coordinates is made. If coordinates didn't pass the check to any parameter, last coordinates are not saved in the device memory.

“Maximum HDOP” sets the maximum parameter value of horizontal delicacy.

"Minimum speed" is a minimum speed of movement.

"Maximum speed" is a maximum speed of movement.

“Maximum jump of coordinates” defines the maximum distance between two coordinates.

“Maximum acceleration” is an acceleration, coordinates are filtered if the value is higher it.

Group **“Pre-setting”.** This group allows selecting one of three settings.

Group **"Protocol"** allows selecting the data transmission protocol to the server.

Group **“Packet structure”.** Optional data which will be transferred to the server together with a basic data are selected in this group. The basic (invariable) data include: number of the device, package number, date and time, location, speed, direction, altitude, HDOP. The first packet header (sent during connection of the server) contains information about: software version, IMEI, device number.

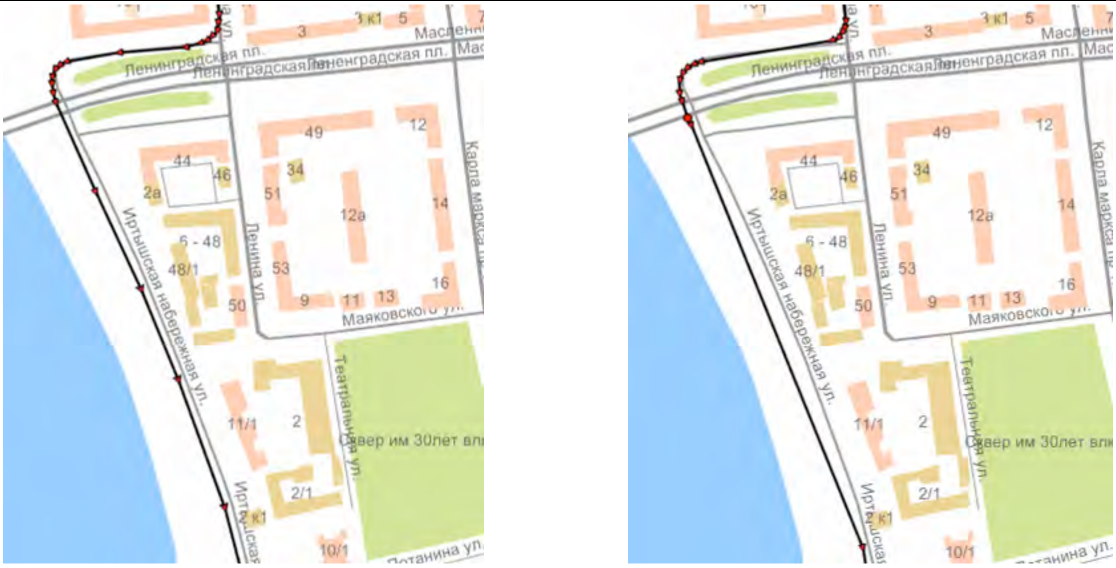


Figure 4.5

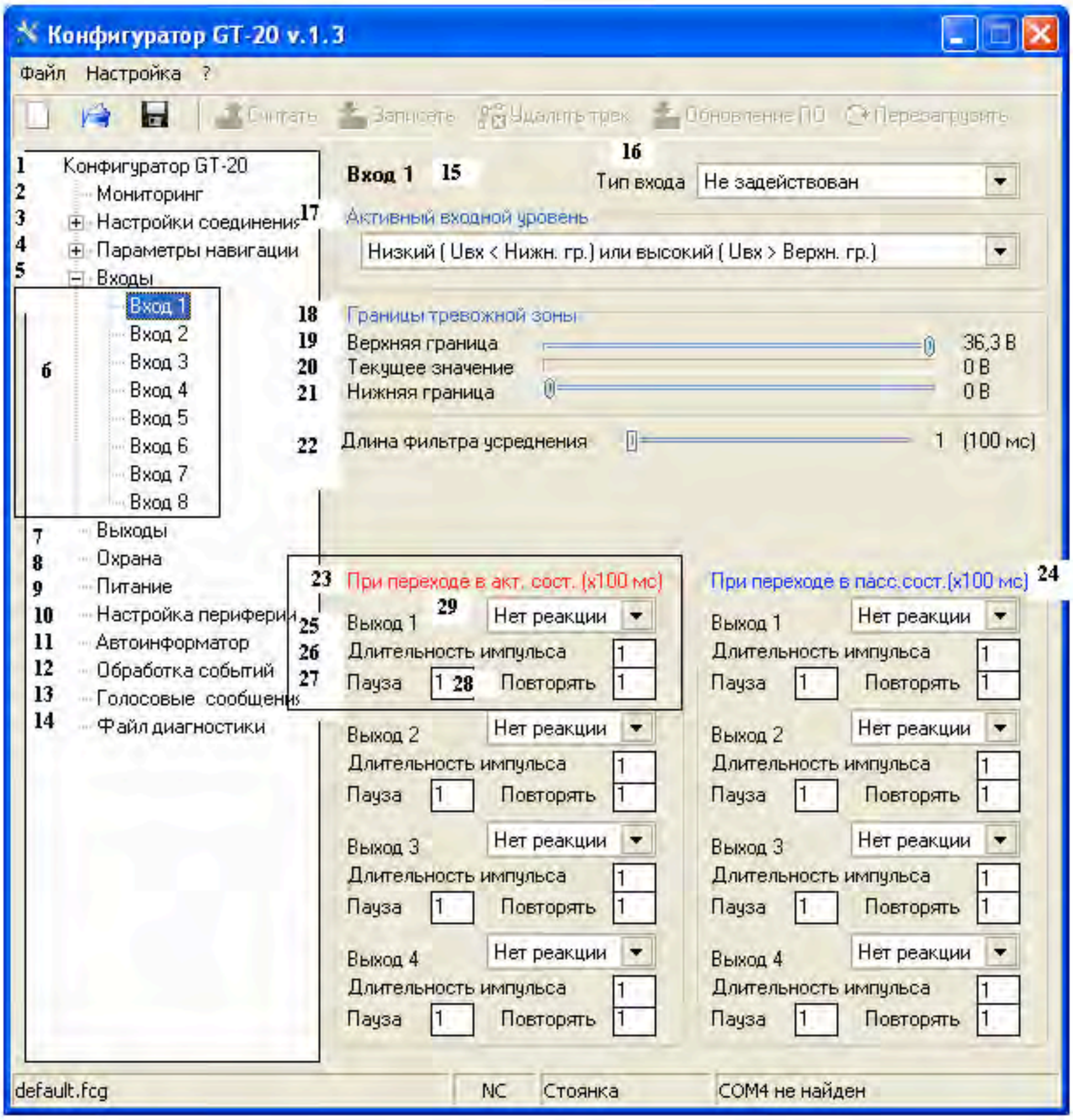


Figure 4.6



Figure 4.7

4.4. Inputs



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Input 1-8
7. Outputs
8. Security
9. Power supply
10. Peripheral configuration
11. Auto informator
12. Event process
13. Voice message
14. Diagnostic file
15. Input 1
16. Type of input
17. Active input level
18. Disturbing zone
19. High level
20. Current value
21. Low level
22. The length of the averaging filter
23. Transition to an active state(x100 msec)
24. Transition to the passive state(x100 msec)
25. Output 1
26. Impulse duration
27. Pause
28. Repeat
29. No response

Figure 4.8

In this window setup of parameters is made for each of eight inputs.

In the field **“Type of input”** is defined an operation mode of the selected input:

- **"Not used".** This input isn't used.
- **“Analog (36 V)”.** An analog input with the range of 0 to 36 V
- **"Digital".** The function is the same, as the previous one has.
- **“Analog 5 V”.** An analog input with the range of 0 to 5 V
- **"Frequency".** This input is used for signal frequency measurement.
- **"Call to a manager".** The transition of the input to an active state leads to a set of the first number in the list. Repeated transition drops a call.
- **"Arming / disarming."** Transition of the input to the active state changes the security mode, i.e. if the device is armed; the mode is change to the disarming, and vice versa.
- **"Ignition control".** Connected to the ignition switch to control the on / off state of the ignition. This feature is useful if you are using an analog fuel level sensor, the indication of which is displayed during the ignition.

In the field “A**ctive input level”** is selected the active state of an input:

- **“Low or high”**. The input is the active if input level is lower than lower level or higher upper level, the intermediate state is passive.
- **“Low”.** The active state of an input is in case of the level is lower than lower level. Any other state is passive.
- **“Free”**. The input is the active if input level is between the lower and upper levels, any other is inactive.
- **“High”.** If input level is higher than upper level, the state of an input is the active, any other is passive.
- “**Low with a hysteresis”.** The active status of an input is in case when the level is lower than lower level, passive state is when higher upper level, a status of an input depends on the movement direction in case when an interval between the lower and upper levels. If level is increased of lower level to the upper level, the state is active. If it is on the contrary, the state is inactive.
- **“High with a hysteresis”.** It is the same as for the previous one, but it is on the contrary.

The upper and lower levels of operation are selected in the **"Disturbing zone".** Here the current value of selected input voltage is also indicated. The indicator of a current state is token a blue

color if the input signal is in an inactive zone, "green" if it is in the free zone, "red" if it is in the active zone.

“The length of the averaging filter” is the parameter, setting a time during which filtering of input signal and can be set of 100 msec to 1000 msec.

In the group **"Transition to an active state(x100 msec)"** it is specified actions for each output in transition of input to an active state.

In group **«Transition to the passive state(x100 msec)»** it is set action for each output in transition of input to the passive state.

The choice of one of four options is available to each output:

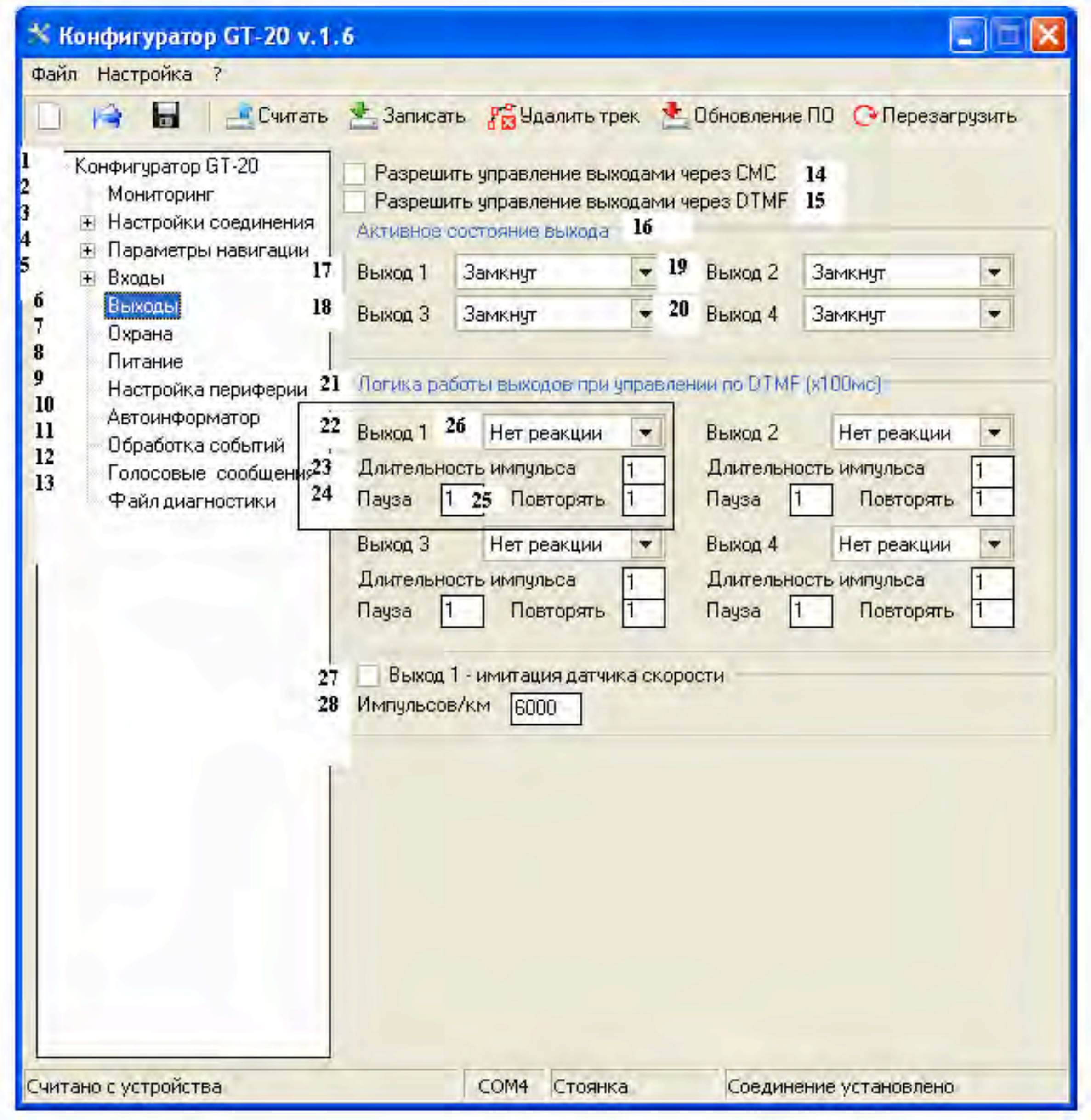
- **«No response».** The output doesn't react;
- **"Off".** The output will be transferred to an inactive state;
- **"On".** The output will be transferred to an active state;
- **"Impulse".** The output state will be determined by the settings.

Parameters of the **"impulse"** output:

- **"Impulse duration"** defines the time during which the output will be active. Time is multiples of 100 msec;
- **"Pause"** defines the time between repetitions of the impulse. Time is multiples of 100 msec;
- **"Repeat".** Parameter specifies the number of impulse repetitions. A value=255 will result of infinite repetition of impulse until the following state transition of an output.

«Frequency threshold» (it is active, if input type is frequency)field is used to process the events. The exceeding of this threshold is considered that the frequency input is passed to the active state.

4.5. Outputs



1. GT-20 Configurator 2. Monitoring 3. Connection setting 4. Navigation setting 5. Inputs 6. Outputs 7. Security 8. Power supply 9. Peripheral configuration 10. Auto informator 11. Event process	12. Voice message 13. Diagnostic file 14. Allow to control of outputs via SMS 15. Allow to control of outputs via DTMF 16. Active output state 17. Output 1 18. Output 2 19. Output 3 20. Output 4	21. The logic of output operation controlling via DTMF 22. Output 1 23. Impulse duration 24. Pause 25. Repeat 26. No response 27. Output 1 is a speed sensor simulation 28. Impulses/km

Figure 4.9

This window is used for parameter setup of each output.

“Allow to control of outputs via SMS”. Switching on of this parameter allows to control of outputs through SMS commands.

“Allow to control of outputs via DTMF”. Switching on of this parameter allows to control of outputs via DTMF commands.

"Active output state" group defines the state (open or closed), which the output have when it is activated.

In the group **"The logic of output operation controlling via DTMF”** it is specified actions for each output in case of its activation. Parameter setup is described in section 4.4 "inputs".

“Output 1 is a speed sensor simulation”. Switching on of this function allows to receive impulse sequence at output with duration which is proportional vehicle motion speed (on the basis of the navigation solution). Using instead of the standard speed sensor. When using this function attentively program the operation of outputs, i.e. in this case it is forbidden to use this output in an event handler.

"Impulses/km". The parameter, setting number of pulses which shall appear at an output when passing 1 km of a way. Calculated of the following formula:

Impulses / km = imp / rev (speed sensor) * rev / km (transmitting number)

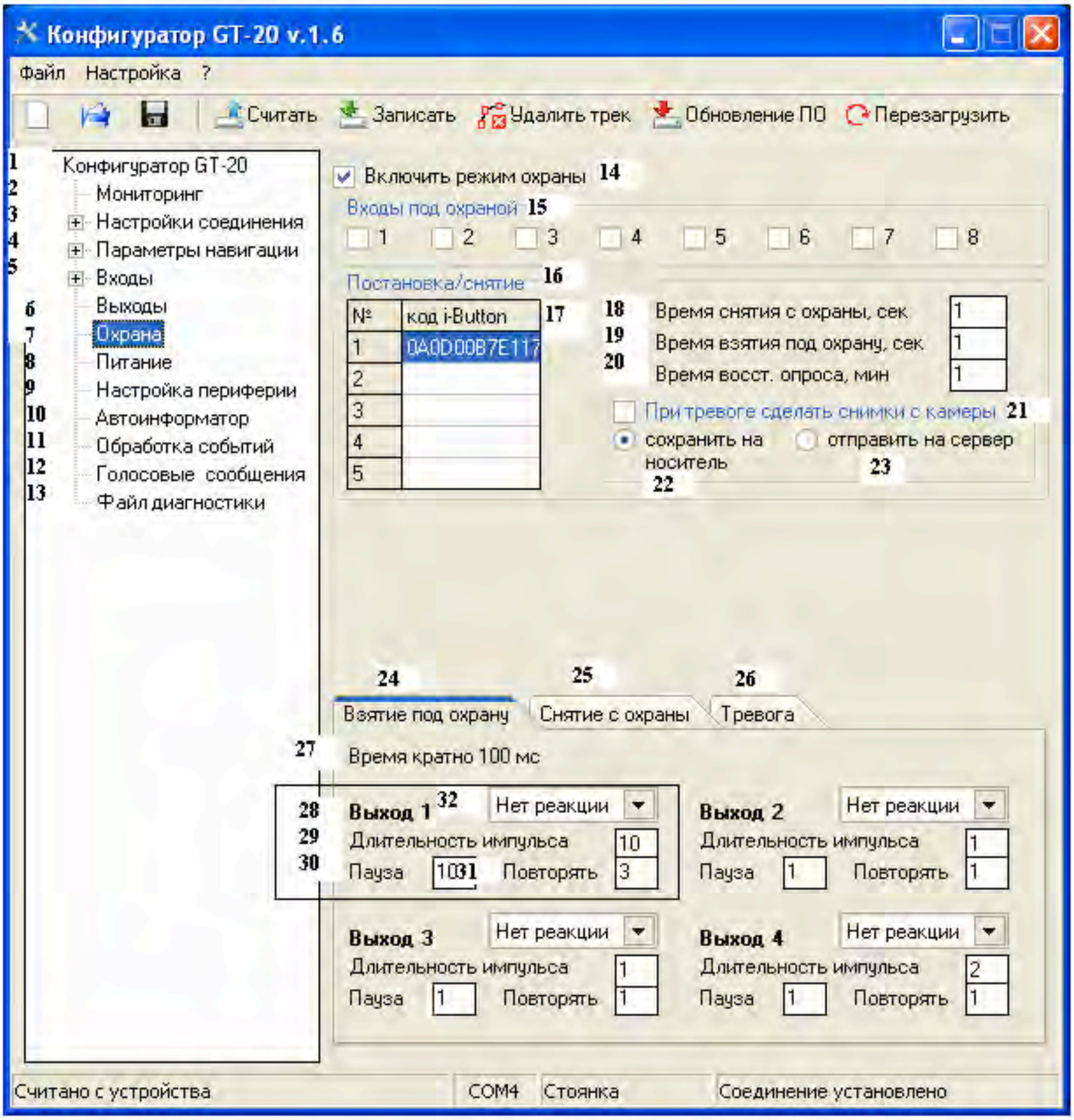
Suppose the speed sensor produces 6 pulses in own revolution at the output, we get 6 imp / rev.

Transmitting number is the number of revolutions that makes the speed sensor when passing 1 km of the way, is determined of the vehicle construction, assume 1000 rev/ km.

By the data obtained: 6000 impulses / km.

If connecting to the tachograph it is used frequency divider (Level adapter), and knowing the division ratio, you can immediately correct the value.

4.6. Security



1. GT-20 Configurator 2. Monitoring 3. Connection setting 4. Navigation setting 5. Inputs 6. Outputs 7. Security 8. Power supply 9. Peripheral configuration 10. Auto informatory 11. Event process 12. Voice message	13. Diagnostic file 14. Activate a security mode 15. Protected inputs 16. Arm / disarm 17. i-Button code 18. Time of disarmed, sec 19. Time of armed, sec 20. Restore inquiry time, min 21. In case of alarm to make pictures of the camcorder	22. Save to the carrier 23. Send to the server 24. Armed 25. Disarmed 26. Alarm 27. Time is multiple of 100 msec 28. Output 1 29. Impulse duration 30. Pause 31. Repeat 32. No response

Figure 4.10

Parameter of **«Activate a security mode»** allows or forbids function of device security.

In group **«Protected inputs»** are specified those inputs which must be controlled. The motion sensor is monitored whenever the device is protected and the prohibition of its control is not possible.

Group of **"Arm / disarm."**

For the control security it is possible to record up to five keys Touch Memory. In the field of the table is entered the code, specified on a key in hexadecimal form, for example «00000B57C5D0». The key code is entered automatically by touching the key to the contactor.

"**Time of disarmed, sec**" sets the time for the device disarming since the moment of fixing the violation of any monitored inputs. Time does not apply to the motion sensor activating. In other words, if during this time the device will not be disarmed, the penetration is fixed and alarm is processed.

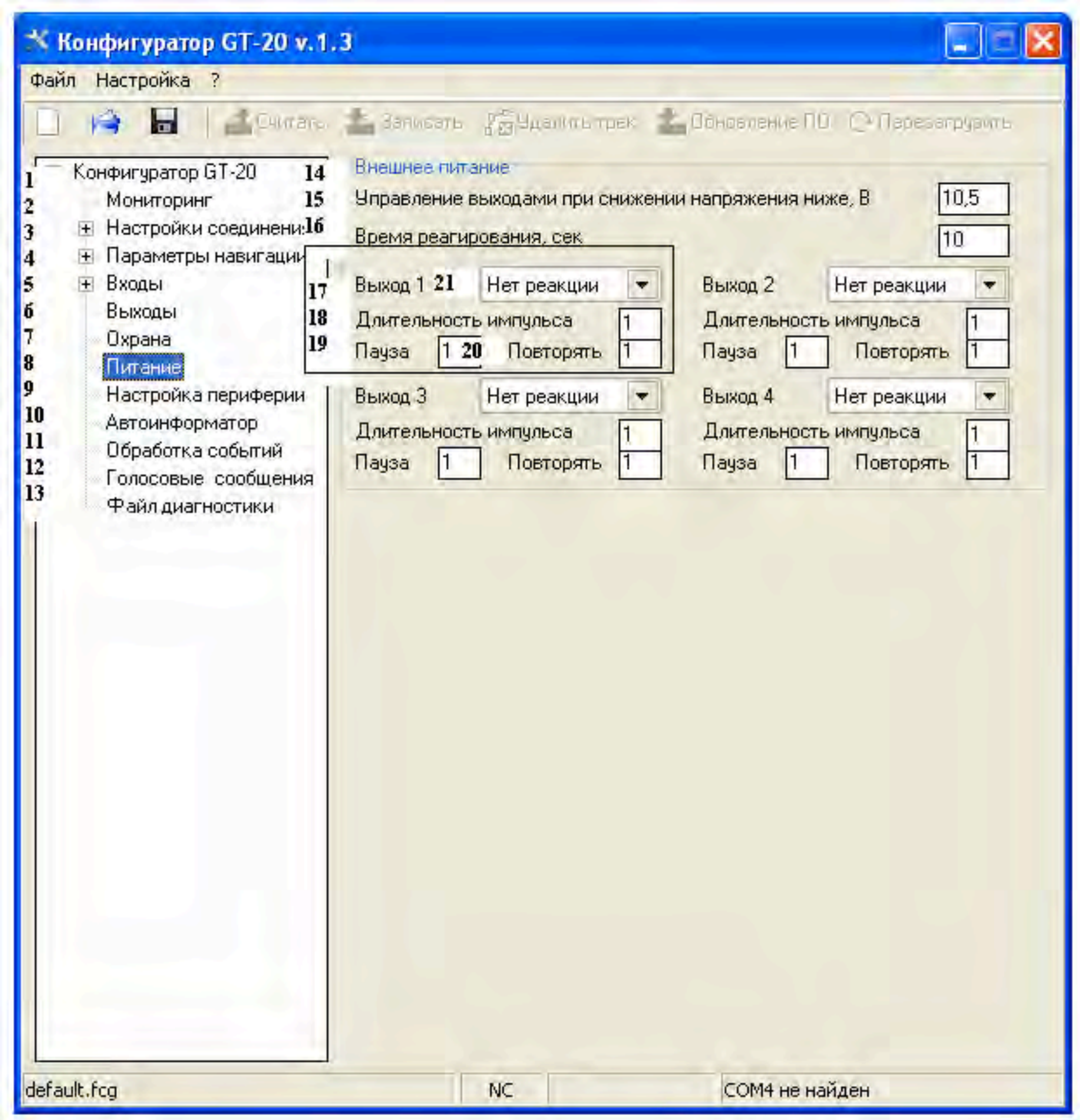
"**Time of armed, sec**" sets the time during which the device will not respond to changes of inputs since the start arm (touching of a key).

"**Restore inquiry time, min**" sets the time after which since the moment of alarm fixing if the last one wasn't disarmed, the device conducts re-arming.

“In case of alarm to make pictures of the camcorder”. If the external JPEG camcorder is connected, in case of alarm, the device will receive continuously pictures from the camcorder, with an interval in a second, and to save to internal SD card (“**save to the carrier**”) or to send directly to the server (“**send to the server**”). The interval of receiving depends on the selected image resolution and bit rate. Recording is stopped in case of alarm removal.

Tabs "**Armed**", "**Disarmed**" and "**Alarm**" set the action for each output. Arming is executed via time of arming or immediately after receiving the command via SMS or from the server.

4.7. Power



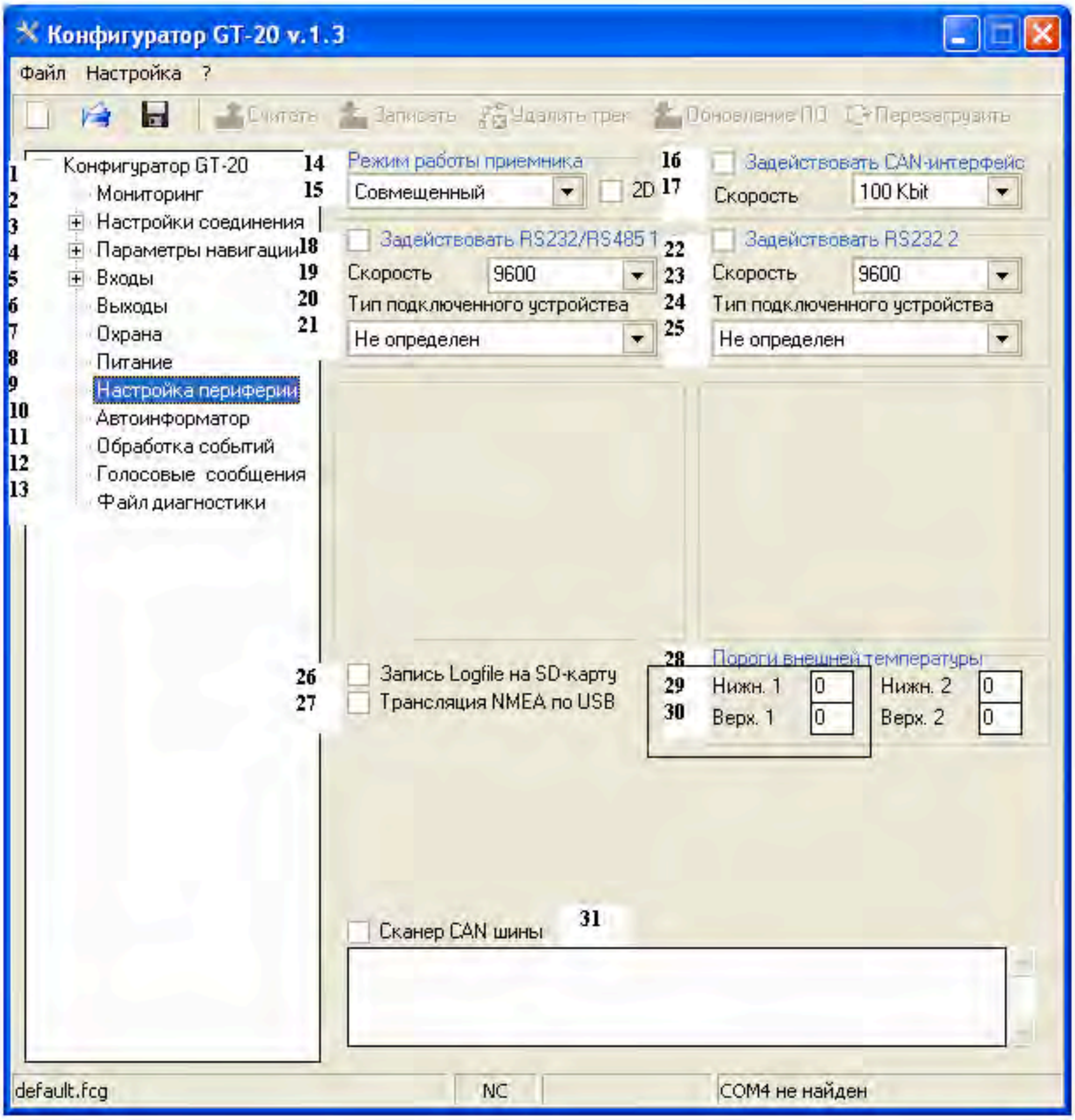
1. GT-20 Configurator 2. Monitoring 3. Connection setting 4. Navigation setting 5. Inputs 6. Outputs 7. Security 8. Power supply 9. Peripheral configuration 10. Auto informatory 11. Event process	12. Voice message 13. Diagnostic file 14. External power supply 15. Output control in case of voltage reduction lower … 16. Response time, sec 17. Output 1 18. Impulse duration 19. Pause 20. Repeat 21. No response

Figure 4.11

The device provides output control while reducing the external voltage below the threshold.

If the external voltage is below a predetermined threshold **"Output control ..."** and during the time **"Response time, sec"** is not recovered, turn on output control with the specified parameters. Parameter setup is described in section 4.4 Inputs.

4.8 Periphery setup



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Outputs
7. Security
8. Power supply
9. Peripheral configuration
10. Auto informatory
11. Event process
12. Voice message
13. Diagnostic file
14. Operation mode
15. Combined
16. Involve the CAN interface
17. Speed
18. Involve RS232/RS485 1
19. Speed
20. Type of the connected device
21. Not defined
22. Involve RS232 2
23. Speed
24. Type of the connected device
25. Not defined
26. Logfile writing to SD-card
27. NMEA transmission via USB
28. Thresholds of external temperature
29. Lower
30. Upper
31. Scanner of CAN bus

Figure 4.12

Group “**Operation mode”** is active if the GLONASS receiver is installed in the device. From the drop down list the operation mode is selected:

- **"Combined".** The current coordinates are determined, using data of GPS and GLONASS satellites;
- **“Only GPS”.** Data are used only of GPS satellites;
- **"Only GLONASS".** Used data only of GLONASS satellites.

By default, the receiver solves the navigation problem in 3D mode. In case of insufficient number of satellites the receiver can pass to a 2D mode if it is authorized **“Allow 2D”.**

“Involve the CAN interface”. Switching on of this parameter allows operation of the built-in CAN interface for more information from the vehicle CAN bus. The CAN interface is used only for data receiving. From the **"Speed"** list is selected data rate of CAN-interface, and can be set of 100 Kbit / sec to 1Mbit/sec.

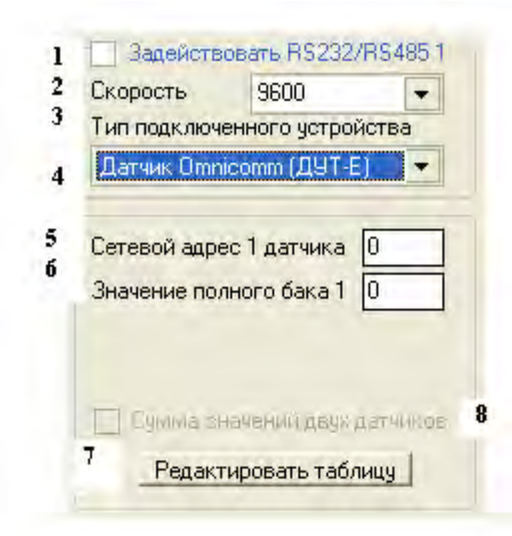
“Involve RS232/RS485 1”. Switching on of this parameter allows operation of the first digital interface. This interface can work in the RS232 (CMOS) or RS485 mode. Switching is done directly on the devices.

"Involve RS232 2." Enabling this parameter allows the operation of the second digital interface. This interface can operate in RS232 (CMOS) or RS232 (UART) mode. Switching is done directly on the device.

Field **"Speed"** set the data rate for the first and second interfaces. The speed can be selected from the list or be entered manually.

The field **“Type of the connected device”** defines the device connected to the first or second interface.

- **"Not defined".** The additional device isn't connected to the interface.
- **"Fuel sensor Omnicomm (FS-E)"** Digital fuel sensor is working to a protocol compatible with the protocol Omnicomm. To receive and process the data from the sensor, you must specify the address of the **"Network address of 1 sensor"** (Figure 4.13). The process of the sensor calibration and address assignment are specified in a manual the appropriate sensor.



1. Involve RS232/RS485 1
2. Speed
3. Type of the connected device
4. Fuel sensor Omnicomm (FS-E)"
5. Network address of 1 sensor
6. Value of a complete tank 1
7. Edit the table
8. Value sum of the two sensors

Figure 4.13

The conversion data function from the sensor can be switching on in the device directly in liters of calibration tables stored in device memory. If the parameter **“Value of a complete tank 1”** is equal to zero, data from the sensor are deduced without conversion, i.e. directly a digital code from the sensor. Value of a complete tank is entered in liter capacity.

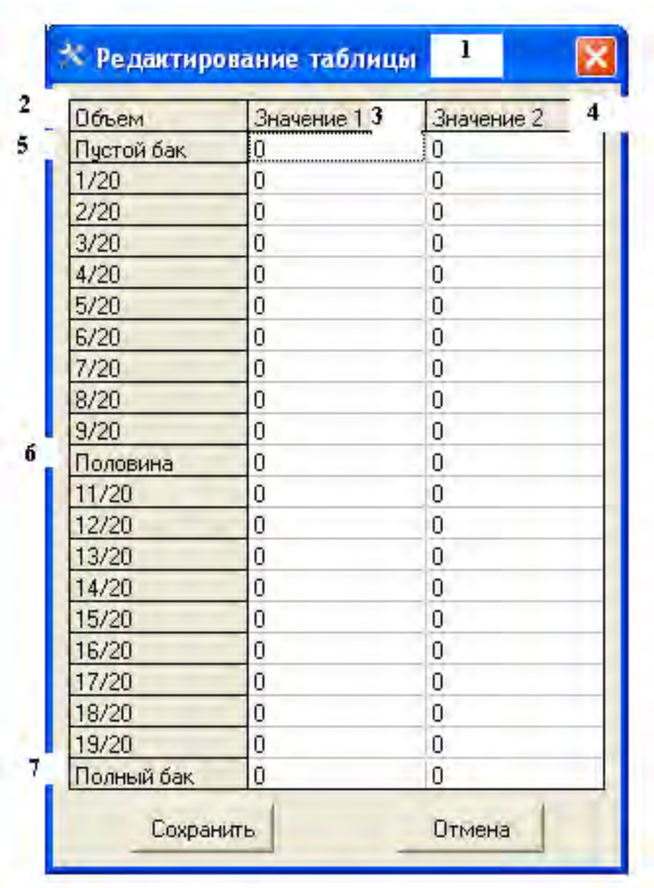
The **"Value sum of the two sensors"** parameter is active in the case, if the two sensors are connected to either RS232 or RS485, and the value of a full tank for each sensor is not equal to zero. Enabling this parameter leads to the indications of the sensors are summed, and the amount to be deduced as the indication of the first sensor.

To click the button “**Edit the table”** leads to opening of an additional window for editing of calibration table data (a figure 4.14).

Filling process of the calibration table is the following:

1. Read a device configuration **("Read");**
2. Value of a complete tank put equal to zero in order to display data directly from the sensor;
3. Write the configuration to the device **("Write");**
4. Open the calibration table and transfer to the “**Monitoring"** tab;
5. Waste a tank, and, having waited for some time (10 seconds) during sensor indications aren't stabilized yet, in line **“Empty tank”** of the calibration table, enter the indication **“Level 1”** on the tab **"Monitoring".** Indications of the sensor can be also entered another way: click the right mouse button on the selected cell and from the menu select point “**Insert the current value”;**

6. Further, assumed that value of a complete tank is equal to 100 liters and divided into 20 equal parts, receive a step of 5 liters **"filling";**
7. Fill the tank with 5 liters of measured liquid. Having waited for some time (10 seconds), enter the sensor indication into the next line of the calibration table ("1/20");
8. Repeat step 7 until the tank won't be filled completely. For the correct operation of the conversion algorithm, it is necessary to fill the calibration table completely;
9. After the completion of table editing, click to button **"Save"** for saving of the made changes;
10. In the **"Value full tank 1"** field enter the value of a full tank, in this example, 100 liters;
11. Save the table in the device memory by pressing the **"Record"** button.



1. Edit the table
2. Tank volume
3. Value 1
4. Value 2
5. Empty tank
6. ½ tank
7. Full tank

Figure 4.14

- **"JPEG camcorder C328".** Device is connected with the external JPEG camcorder C328 or other compatible protocol camcorder. In the field **"Resolution"** is selected image resolution with which it will save to the external carrier (a figure 4.15).

The button **"View"** allows receiving images from a camcorder with a resolution specified in the **"Resolution"** to set its position.

- **"Sensor (s) of fuel RS485”.** Digital or fuel sensors with the RS485 interface are compatible with the protocol Omnicomm (Figure 4.16). The setup process is described above in the description of **"Fuel sensor Omnicomm”**.

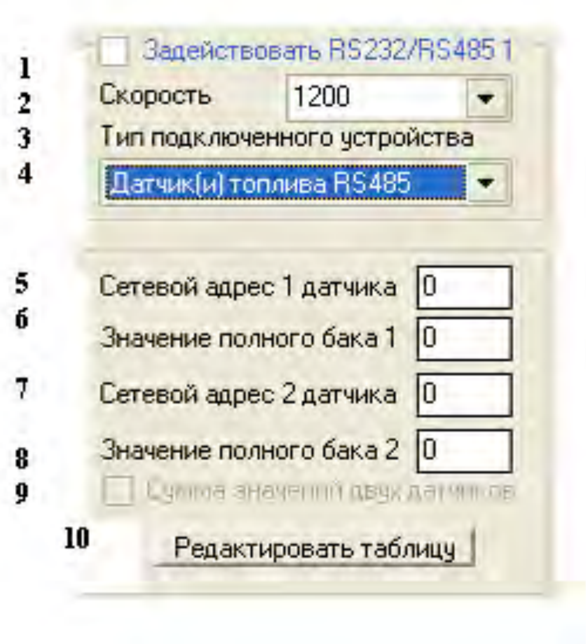


Figure 4.15

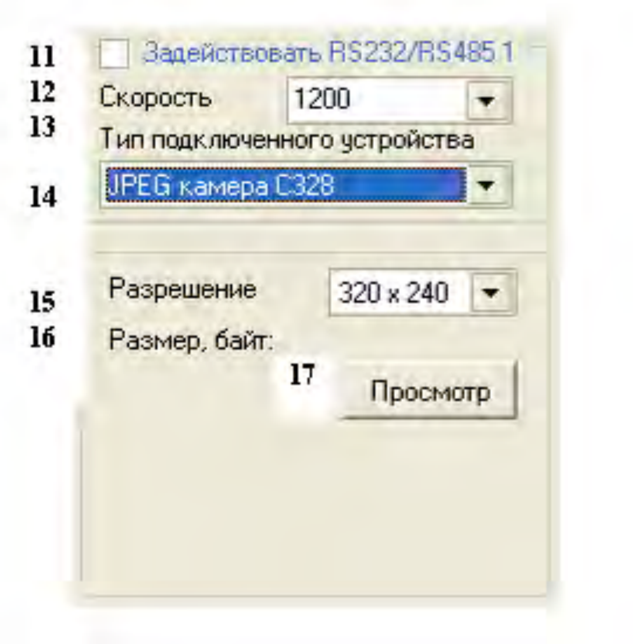


Figure 4.16

1. Involve RS232/RS485 1 2. Speed 3. Type of the connected device 4. Fuel sensor RS485 5. Network address of 1 sensor 6. Value of a complete tank 1 7. Network address of 1 sensor 8. Value of a complete tank 1 9. Value sum of the two sensors 10. Edit the table	11. Involve RS232/RS485 1 12. Speed 13. Type of the connected device 14. JPEG camcorder C328 15. Resolution 16. Size, byte 17. View

- **“Vehicle K-Line."** The device is connected to the vehicle K-Line via the appropriate transformer.
- **“Radio module of 433 MHz**”. The radio-frequency module is connected to the device.

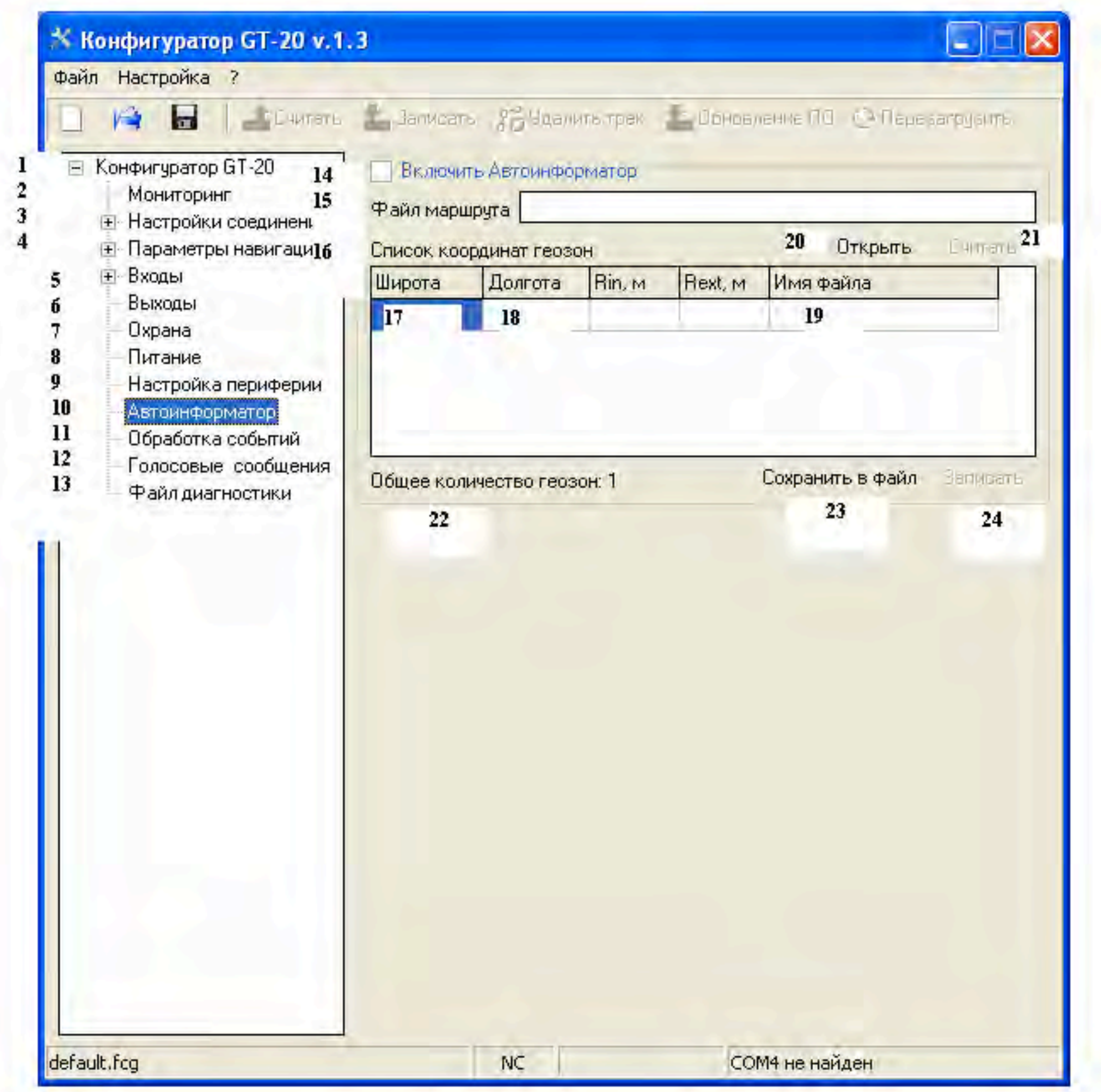
“The record of Logfile to a SD card”. Switching on of this parameter allows record of the diagnostic file to the external carrier. If the device is connected to a configurator, record of the diagnostic file is suspended. Start diagnostic recording leads to a slight reduction in device operation, therefore to use this function it is desirable only if it is necessary to carry out device diagnostics in movement when connection of a configurator is impossible.

"Scanner of CAN bus." Enabling this parameter allows viewing incoming messages based on CAN-bus vehicle.

Group "**Thresholds of external temperature"** is used when processing events from external temperature sensors. If the threshold **"Lower"** is less than the threshold of **"Upper",** it is considered that the source is switched to the active state. This state will be active as long as the temperature will not become below the lower threshold, thus the state will change a mode to a passive. Passive state will be active until the temperature transition through the upper level. If the "lower" threshold is higher the **"Upper"** threshold and algorithm is the same, but while the temperature transition of the upper level, it is considered that the source was passed to the passive state.

"NMEA translation via USB”. If the parameter is enabled, NMEA messages coming from a satellite receiver will be translated via the USB port.

4.9 Auto informer



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Outputs
7. Security
8. Power supply
9. Peripheral configuration
10. Auto informatory
11. Event process
12. Voice message
13. Diagnostic file

14. Enable Autoinformer
15. Route file
16. List of geozone coordinates
17. Latitude
18. Longitude
19. Name of the reproduced file
20. Open
21. Read
22. Common quantity of geozone
23. Save as a file
24. Write

Figure 4.17

The device has a function autoinformer. To use it, you must enable the parameter **"Enable Autoinformer".** Autoinformer operation can lead to insignificant decline of device productivity. Before using the autoinformer, you need to prepare audio files and edit the route files.

Remove the SD-card from the device and connect it via a card reader to your computer.

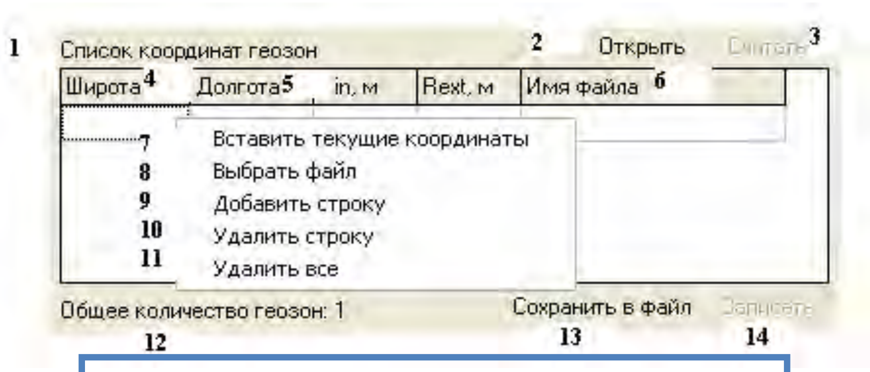
Create **"Autoinfo"** folder in the root of SD-card and place there the audio files with the following parameters: wav, PCM, 12 kHz, mono, 8 bit. File name length with filename extension must not exceed 29 characters. For example: Naberezhnaya.wav.

Start the Configurator to create or edit a file of a route **“Marshrut.fai”** and go to the tab "Autoinformer".

Adding geozones coordinates (Figure 4.17) can be either manually or using the context menu (Figure 4.18). Last one is a useful when recording a route following to it. To call a context menu click right mouse button to the selected cell.

The following parameters are entered for each geozone:

- Latitude;
- Longitude;
- Internal radius of an actuating zone (Rin);
- External radius of an actuating zone (Rext);
- A name of the reproduced file.



1. List of geozone coordinates
2. Open
3. Read
4. Latitude
5. Longitude
6. Name of the reproduced file
7. Insert the current coordinates
8. Select File
9. Add a line
10. Delete a line
11. Delete everything
12. Common quantity of geozone
13. Save as a file
14. Write

Figure 4.18

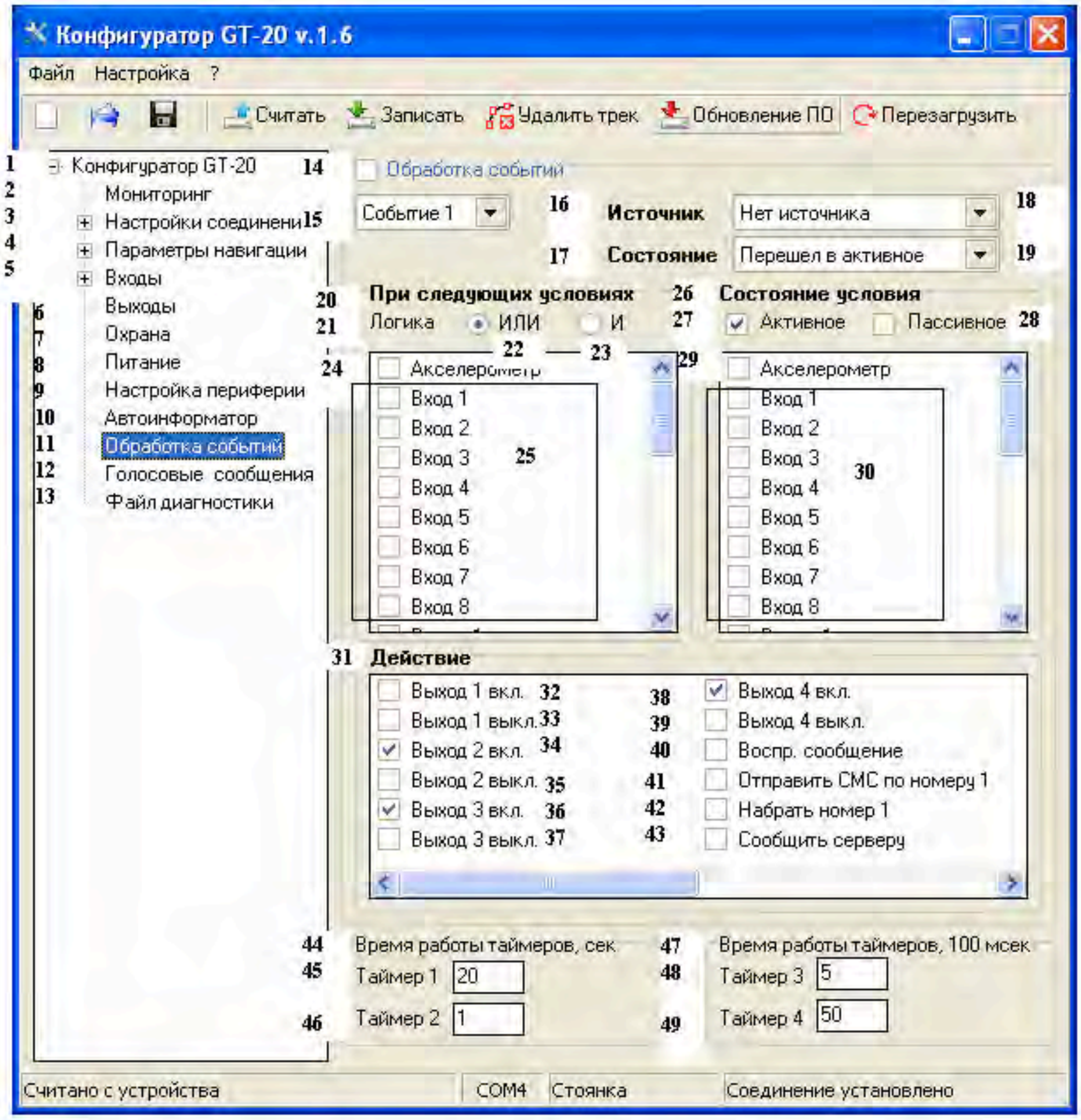
The context menu items:

- **"Insert the current coordinates"** Insert the current location in the selected cell;
- **"Select File."** Allows specifying the file to be displayed at the entrance to the current geozone. Files should be indicated only those that are in the «Autoinfo» folder;
- **"Add a line"** Add another line of geozone parameter. The maximum number of geozone is limited to 100;
- **"Delete a line".** Deletes the line for the selected cell
- **"Delete everything"** Remove all parameters of geozones.

After entering the geozones parameters, save the route file **"Save as a file"** to the **«Autoinfo»** folder. Saved it in another folder will cause of the autoinformer function will not work.
If the file of a route is created and it is necessary to edit it, use the **"Open"** button.
Further inset a SD card into the device and reboot it.

To edit the file of a route is possible without removing a SD-card from the device. For this purpose set connection with the device, transfer to the tab **"Autoinformer"** and click the **"Read"** button. The read file will be displayed in the appropriate table. After editing of route parameters for saving the file click the **"Write"** button.

4.10 Event Processing



1. GT-20 Configurator 2. Monitoring 3. Connection setting 4. Navigation setting 5. Inputs 6. Outputs 7. Security 8. Power supply 9. Peripheral configuration 10. Auto informatory 11. Event process 12. Voice message 13. Diagnostic file 14. Event Processing	15. Event 1 16. Source 17. State 18. No source 19. Transferred to active 20. Conditions 21. Logic 22. AND 23. OR 24. Accelerometer 25. Input 1-8 26. Condition state 27. Active 28. Passive 29. Accelerometer	30. Input 1-8 31. Action 32. Output 1 is on 33. Output 1 is off 34. Output 2 is on 35. Output 2 is off 36. Output 3 is on 37. Output 3 is off 38. Output 4 is on 39. Output 4 is off 40. Replay the message 41. Send SMS to number 1 42. Dial a number 43. Report to server	44. Operating time of timers 45. Timer 1 46. Timer 2 47. Operating time of timers, 100 msec 48. Timer 3 49. Timer 4

Figure 4.19

To switch on **"Event Processing"** allows the user of the available resources to organize their own algorithm (s) of the device.

To the user it is available to program up to 20 events.

The event source is selected in the field **"Source"** from the available list.

In the **"State"** field the state is set to which the source is transferred or have**:"Transferred to passive," "Transferred to active", "Passive," "Active”.**

"Logic" defines a mode of condition check.

"And" - action will be executed if all specified conditions are in the selected state.

"OR" - action will be executed, if at least one of the specified conditions is in the selected state.

The conditions are selected in the field **"Conditions"** in case of which the event source state is checked. The condition can be not specified, and the operations are executed for a selected source state.

Condition state (active / passive) is set in the **"Condition state"** field, which is checked when processing the event, if the condition is selected.

In the field **"Action"** actions is specified which are necessary for executing. If **"Replay the message"** is selected as action, it is necessary that there was an "event_X.wav" file on a SD card in the **"Voice"** folder, where X is an event number of 1 to 20. Parameters of the sound file: wav, PCM, 12 kHz, mono, 8 bits.

Algorithm of event processing is the following: if **"Source"** passed to **"State"** in case of execution of selected **"Conditions",** it is carried out selected **"Actions".**

Action **"Send SMS"** and **"Dial a number"** tied to the events. For example, the events of 1 to 4 is attached the first number in the list, the events of 5 to 8 is attached the second number and etc.

«Operating time of timers». This field represents the time interval of the timer operation, if the last are used in the event processing. The operation time of timer #1 and #2 is multiple of 1 sec, and timers #3 and #4 is 100 msec.

When programming it is necessary to remember, that value of a source and a condition weren't identical, otherwise the event cannot occur.

Consider the following example. The external indicator in the form of LED is connected the output#2 via a current limiting resistor to the supply voltage. It is necessary that in case of object movement indicator briefly flashed one time per second.

To implement this algorithm requires two events**, "Event 1"** is to activate the indicator and **"Event 2"** is to turn off the indicator.

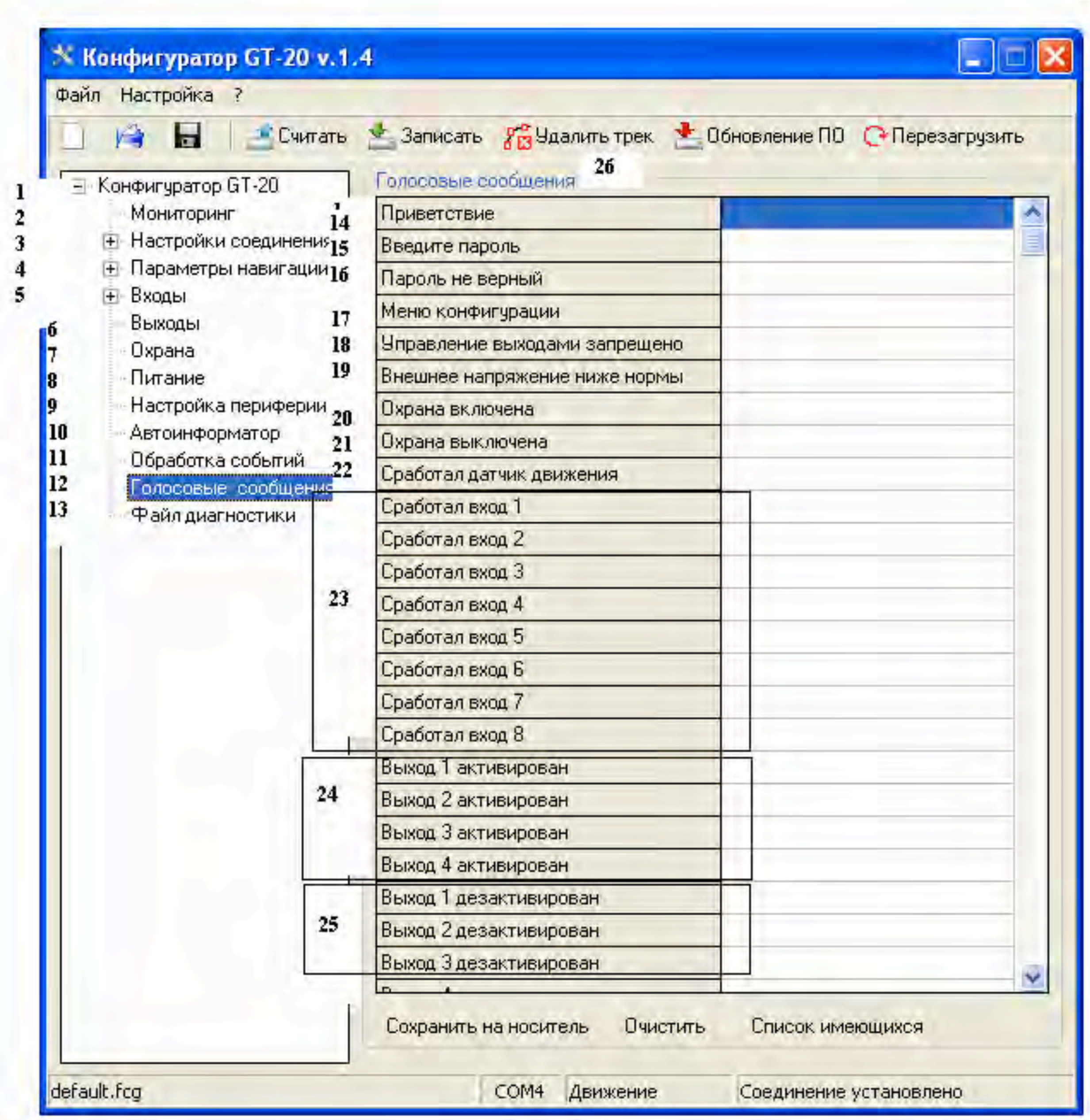
"Event 1" program to the following way:

- As the **"Source"** select **"Timer 1, sec";**
- **"State":"Switch to the active";**
- **"Logic"** - any, as a condition is one: **"The movement of the object";**
- **"The condition state" - "The movement of the object"** ticks off, i.e. in the active status;
- As executed action select **«Output 2 is on».**

"Event 2" will have other parameters:

- "**Source": "Output 2";**
- "**State”: "Active";**
- **"Logic":** any;
- **"Condition":** It is possible not specified, or if the output is used in other events, the **"movement of the object";**
- **"The condition state" - "The movement of an object" - "Action": "Output 2 is off."**

4.11. Voice message



1. GT-20 Configurator
2. Monitoring
3. Connection setting
4. Navigation setting
5. Inputs
6. Outputs
7. Security
8. Power supply
9. Peripheral configuration
10. Auto informatory
11. Event process
12. Voice message
13. Diagnostic file
14. Welcome note
15. Enter a password
16. Incorrect password
17. Configuration menu
18. Output control is forbidden
19. External voltage is lower…
20. Armed
21. Disarmed
22. Movement sensor is activated
23. Input 1-8 is activated
24. Output 1-4 is activated
25. Output 1-3 is deactivated

Figure 4.20

This page allows working with the files which are storing on a SD card, without pulling out it from the device.

In the group **"Voice messages"** it is bonded of audio file to a appropriate voice message. Select a cell of voice message that you wish to bind a file, and then clicking the right mouse button to a dialog box in which specify the audio file and click **"Open".**

In the appropriate cell there will be a way to the selected file.

The button **“Save to the carrier”** is used for copying of the selected audio files to device SD card.

The button **"Clear"** is to clear all field of table.

The **"The list of available"** is displayed a list of files which is present on the carrier.

4.12. Diagnostics file

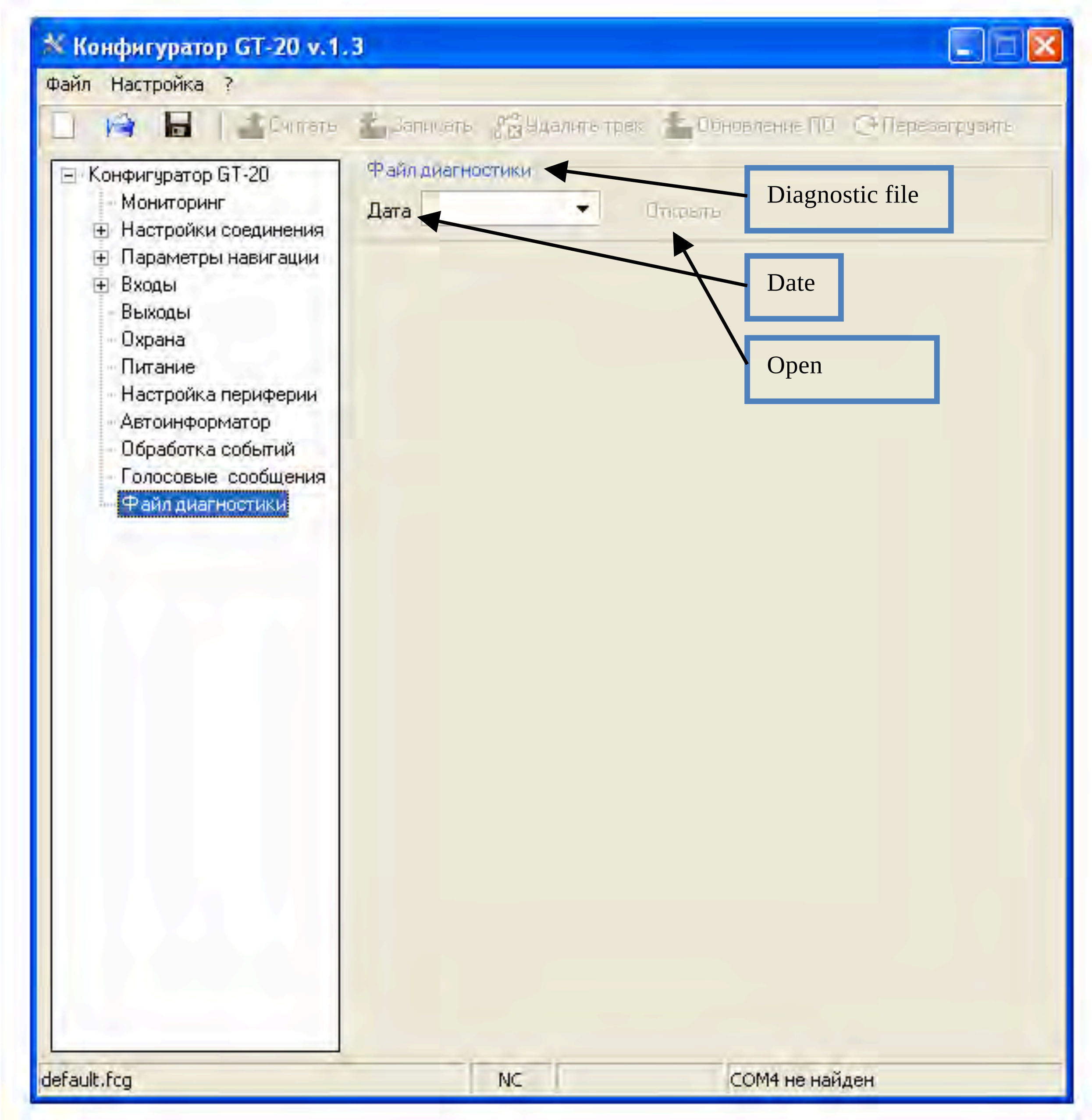


Figure 4.21

Group **«Diagnostics file»** allows reading the saved file of diagnostics. For this purpose in the field **"Date"** select day for which it is necessary to receive the file of diagnostics and click the **"Read"** button.